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OWN TO THE ICE

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QUARTERMAIN

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BY L. B. QUARTERMAIN

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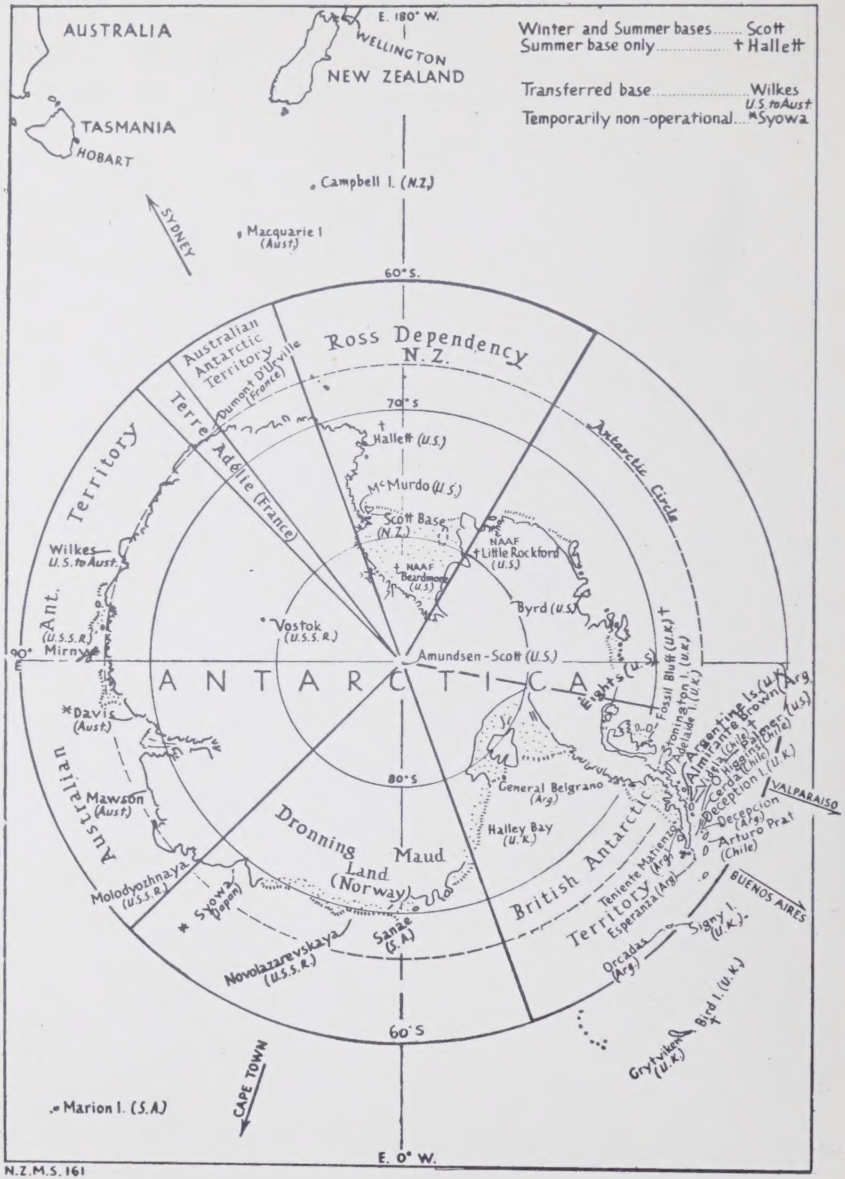

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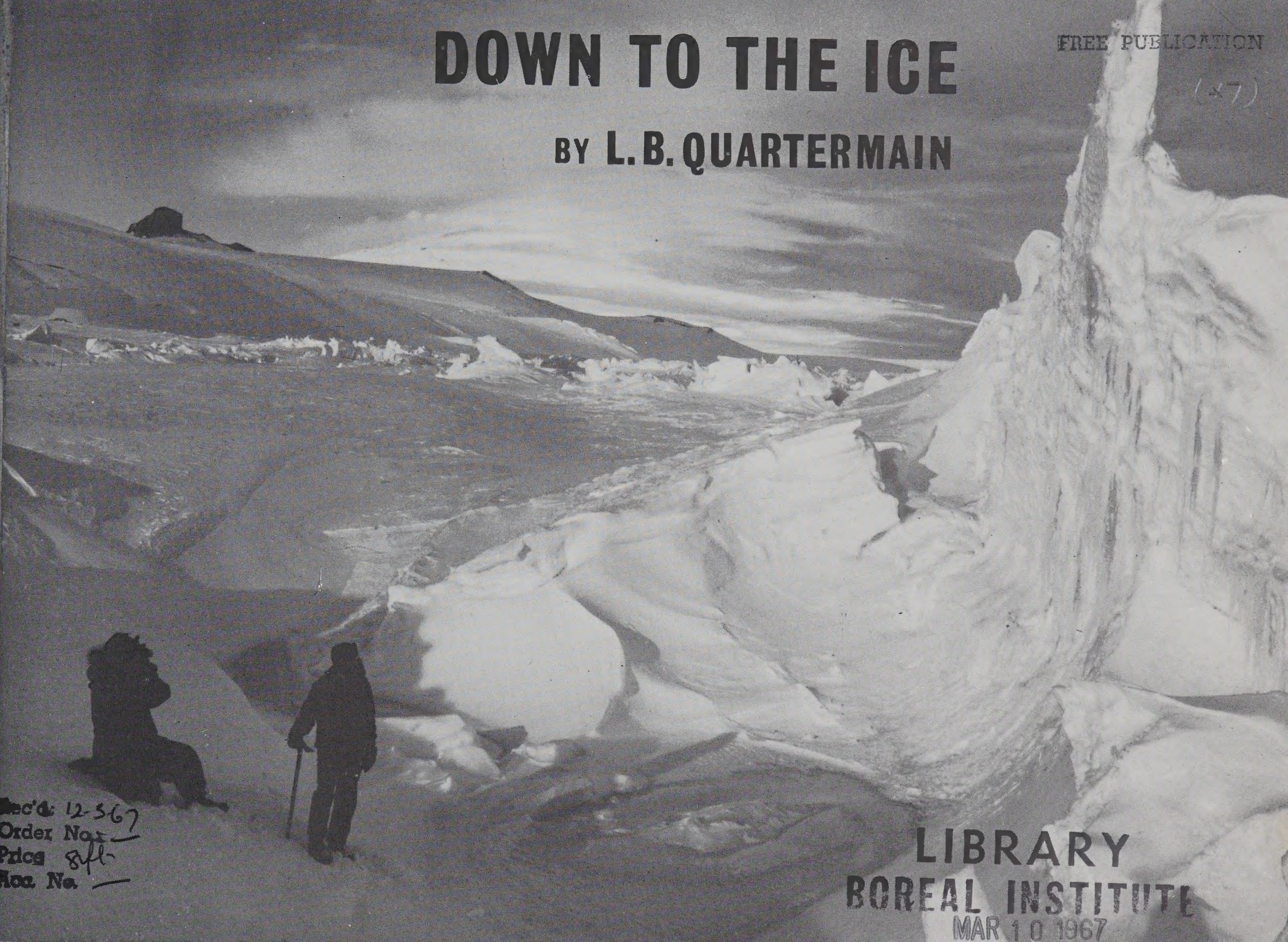
DOWN TO THE ICE

BY L. B. QUARTERMAIN



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In this bulletin I have tried to describe the Antarctic today as seen through the eyes of a young New Zealander, a Queen's Scout privileged, as several have been, to spend a summer period working with older members of the New Zealand Antarctic Research Programme in the Ross Dependency.

This, however, is not an exact account of any one boy's real experiences and no attempt has been made to describe the activities of NZARP in any one particular year. Names are fictitious and if any 'Bob', for example, did what either of these Bobs is described as doing, it is purely accidental. Sir Charles Wright is 'real', but is in no way responsible for the words I have taken the liberty of putting into his mouth.

I am indebted to several specialists in Antarctic work who have checked particular sections for accuracy: Mr W. M. Prebble, *A Dry Valley;* Dr B. Stonehouse, *The Natives;* and Mr A. J. Heine, *Last Days.* Lieutenant-Commanders B. Pope and A. G. Dunn have been my nautical advisers.

L. B. Quartermain

THE FICTIONAL CHARACTERS

Queen's Scouts: Jim, Bob, and Terry.
Scott Base Team: Harry (Leader) Bob (Deputy Leader).
Jack (Diesel mechanic).
Peter (radio operator).

In the Field

Victoria University of Wellington: Alan (leader), Bert, and Len.
University of Canterbury: Pete (Leader) Andrew, Malcolm.
Geological and Topographical Party: George (leader and geologist), Trev (geologist), Dave (surveyor).
U.S. Pilot: Lieutenant Smither.
Russian Exchange Scientist: Ivan.

DOWN TO THE ICE

Headed South

I had just come down from the high observation platform at Christchurch International Airport after seeing some friends off on the Viscount to Wellington, when I ran into three hefty chaps in the uniforms of Queen's Scouts. They had evidently come across from one of those huge American Hercules planes which fly to the Antarctic. I had been watching it come in and touch down. With them were a number of tough-looking men mostly wearing luxuriant beards, and I guessed that the scouts must have been there to meet someone who had been South and to welcome him home.

Then, quite unexpectedly, one of the scouts came up to me and asked me if I knew where there was a letterbox. I took him along and said, not thinking, 'Been meeting someone?' The cheery scout gave me a grin and said, 'No, we've just come back ourselves.'

'Back!' I exclaimed. 'What, not from the Antarctic?'

'Oh yes,' he replied, 'we've been down there for three months.'

I could hardly believe it. I had always hoped that some day, when I grew up, I might become a good enough geologist to gain a place in a field team as a distant relation of mine had done; and here were three boys not much older than myself – they were all 17 years old, I discovered – who had actually been 'down to the ice', (as the Americans say) themselves. Anyway, we were soon talking as if we had known each other for years, and we became good friends, Jim and I. He often came to my home and told me a great deal about his journey south and what he saw and did in the Antarctic. Here is Queen's Scout Jim talking:

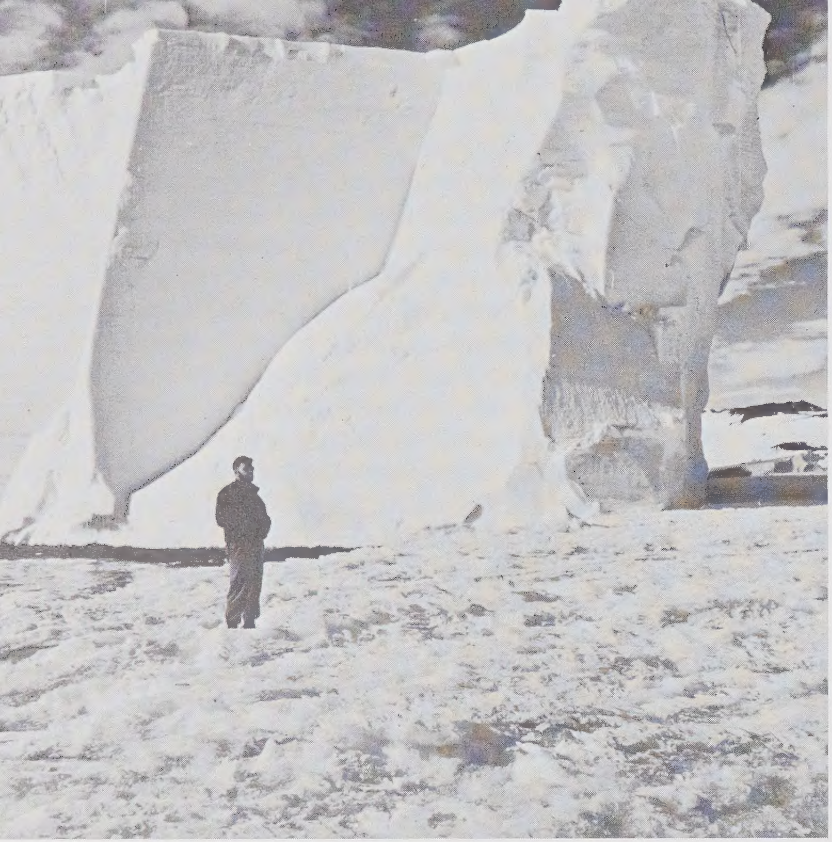
After I had been selected, there was a wild scurry of preparation – being fitted out with bulky Antarctic clothing at the Antarctic Division, medical and dental examinations, filling in all sorts of forms, reading instructions – until the day came when the three of us boarded the New Zealand Antarctic ship HMNZS *Endeavour* at Lyttelton and headed south on our great adventure.

Life on board *Endeavour* was not so very different from life on any other ship for the first few days of our voyage of over a week, so I had time to look round the ship and to become acquainted with the ship's company.

Endeavour is a tanker launched in 1944. She was an American naval vessel, but has been on loan to New Zealand since 1962. She is not an icebreaker, so that when she has to force her way through ice she has to follow close on the heels of *Glacier* or *Eastwind* or one of the other powerful United States icebreakers which can easily smash through ice ten feet thick.

Endeavour has a complement of six officers and 62 ratings, and is under the command of Commander P. R. H. Silk. We scouts had our meals with the ratings and we slept in a kind of bunk-room. Bob and Terry and I were able to help in various ways – we all did our turn at watchkeeping for one thing – and everybody tried to make us feel at home. We enjoyed most of all talking with the 'old hands' on board. Some of them had already spent two summers in Antarctic waters.

We soon learned that *Endeavour* is diesel-electric powered, is 310 feet long and has a displacement of 1,850 tons (light), 4,335 tons (full load), so she is considerably smaller than, say, one of the inter-island ferries. In addition to general cargo, she can carry 600,000 gallons of fuel in her tanks, generally diesel oil, and most of this is for American use. In fact, our first big job was to transfer about 50 tons of oil to the USS *Mills*, which was on 'ocean station' not far from Campbell Island, about 400 miles south of New Zealand. This is one of the ways in which we New Zealanders



An iceberg in McMurdo Sound

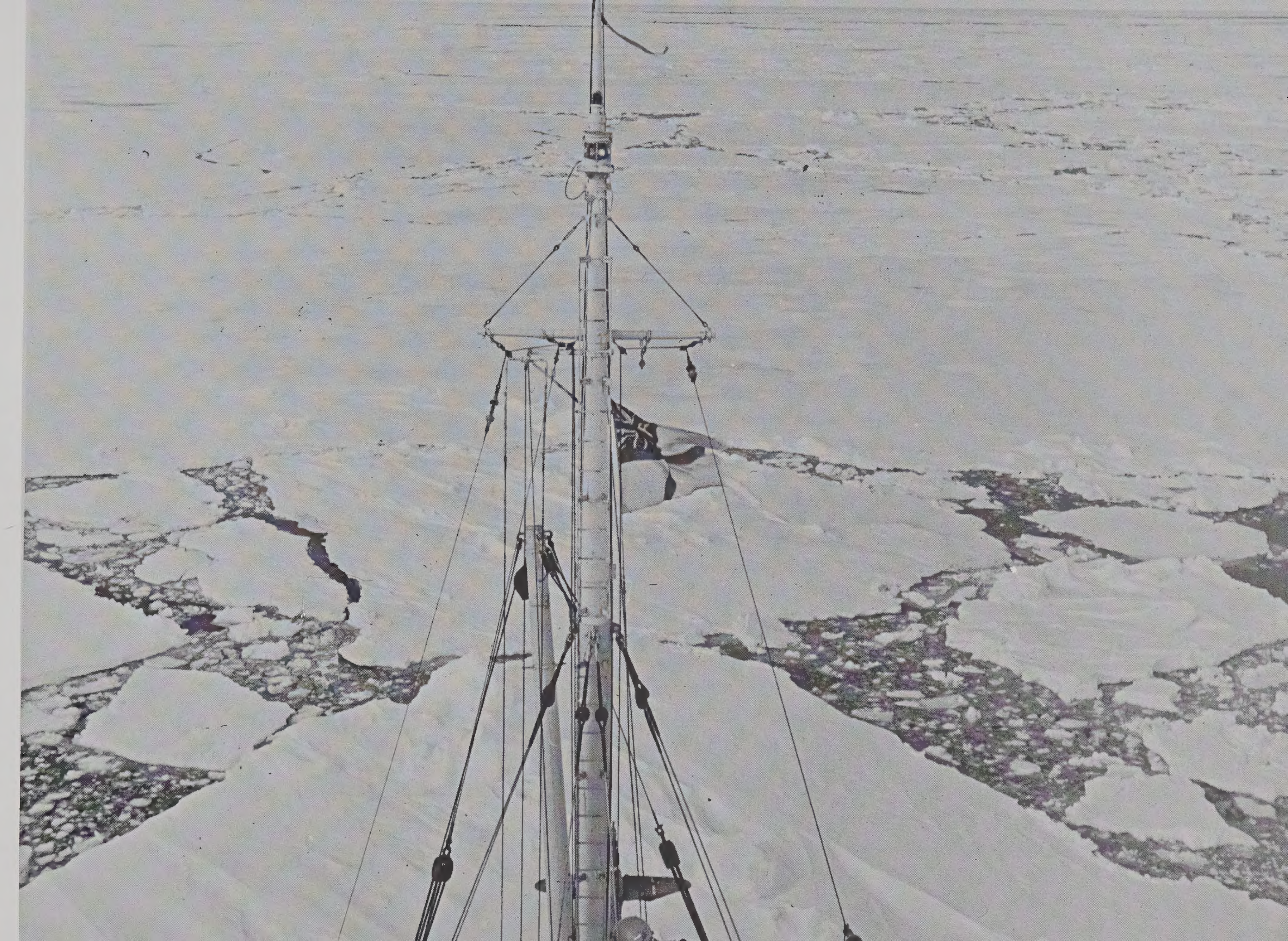
can partly repay our American friends for all the help they give us in our joint Antarctic work. You know, I suppose, that most of our men are carried down to the Antarctic on United States planes. Only a few like us go by ship nowadays.

I wouldn't like the job those men on *Mills* have, or the men of our own ship HMNZS *Rotoiti*, which generally does this weather-picket work while *Mills* is in Dunedin for reprovisioning anc repair. Yes, repair: the seas here can be just terrific and always do a lot of damage to the weather ships. Why do *Mills* anc *Rotoiti* have to do this work? Well, first of all, to provide weather data so that the meteorologists in New Zealand can tell ahead i it will be reasonably safe for the big aircraft to make the long 2,000 mile flight from Chi-Chi to McMurdo. (Chi-Chi is the American sailors' name for Christchurch.) Then too, if anything did go wrong and a plane got into trouble, the ocean-picket ship could rush in to give help.

But it is a cold, dreary, uncomfortable job just tossing abou hour after hour, day after day, getting nowhere, in those tempestuous waters. Some of us were very seasick too, but won't say any more about that. I know I was glad when the oi was all transferred and we could carry on to the south.

Soon after we had left New Zealand we had met the sea bird welcoming us to sub-Antarctic waters: the giant wanderin albatrosses, with their wing span of up to 12 feet and their glorious effortless gliding; and the beautiful little snow-white petrels. Nov we were all agog to see the first outriders of the Antarctic proper It was on our fourth day out that I heard Terry shouting 'Jim Iceberg!' I rushed up on deck and there it was, away on our por beam, a great rectangular slab of ice, perhaps 100 yards long almost perfectly flat on top and rising about 100 feet from th sea. One of the sailors told me that nearly all the bergs we woul see would be these 'tabular' bergs and he told me why. The ice bergs are great chunks broken off from the seaward edge of th Ross Ice Shelf, which is a vast plain of ice up to 1,000 feet thick as big as the whole of France, which fills the southern part of th Ross Sea through which we were steaming. This ice shelf, which th old explorers called 'the Barrier' because it completely foile their attempt to get any further south, is fed by the great glacier

Through the pac



which descend from the mountains to the south and west of it, and it is slowly but steadily moving out, north, towards the sea. Every now and then a great mass of the sea edge breaks off and floats north as an iceberg, like the one we were looking at.

Soon there were flat-topped bergs in all directions, and then, ahead of us, a long white line, not rising 100 feet out of the water like the icebergs, but just a few feet. It wasn't a solid line either but just the edge of a crazy-pavement of icefloes like paving stones of all shapes and sizes. This, then, was the famous 'pack'. Here we were joined by USS *Glacier* which was to help us by breaking a lane through the pack for us to follow. It was December, and the 'old hands' told us that if we had been a month earlier we would have been looking at a solid mass of ice, the kind of pack which stopped Captain Cook in 1773 from going any further: stopped everybody until another great English sailor, Captain James Clark Ross, nearly 70 years later, led an expedition in two ships, *Erebus* and *Terror*, which had been specially strengthened to smash through the ice.

But I have forgotten to tell you something else. It was cold by this time, and like the others we spent most of our time down below. One night Terry and I went up on deck for a walk and we were surprised to see that it was still daylight. 'Do you know what time it is?' Terry said. 'It's nearly ten.' And the days grew longer and longer as we steamed south and the nights shorter and shorter. Soon we would be seeing the midnight sun.

Although the break-up of the pack had been going on for several weeks now, the ice was still packed quite tightly in some places and it would have been hard and dangerous for *Endeavour* herself to try and force a passage through the pack. So we were glad to have the big United States icebreaker to smash a way through for us. It was a real thrill to see the power-packed ship drive at the solid ice and bring her full weight down till ice cracked and separated to the right and left – to starboard and port I should say – leaving a lane of almost ice-free water. We followed close in *Glacier's* wake before the broken ice could close in again and stop our passage. It wasn't long, about a day I suppose, till we were through the pack and the open Ross Sea lay ahead of us.

Soon something else lay ahead of us, too. I saw it first this time. Away on our starboard beam, glistening white in the sunshine, lay a range of great white peaks rising ten to twelve thousand feet into the sky, just like our New Zealand Southern Alps. This was the Admiralty Range. We were looking at the Antarctic Continent. It was exciting to think that this was the very same sight that greeted Ross on January 11th, 1841.

From now on we were never out of sight of land to starboard until on our tenth day out the sky clouded over and we had to slow down because of the danger from bergs. About three o'clock the next afternoon Bob and I went up on deck and greatly to our delight the sun seemed to be making an effort to come out. Then there was blue sky ahead – and as we looked we both saw it at once, a single distant peak rising above the cloudbanks like an island, and a white cloud streaming away to the east from the summit. But was it cloud? Or could it be something else? Could it be steam from the crater of Erebus, the famous Antarctic volcano?

At last there could be no doubt. Mount Erebus it was. As high as Mount Cook. Soon the sky cleared properly and we could see lower land on our port beam as well. One of our sailor friends told us it was Cape Bird. 'And if you keep your eyes skinned,' he said, 'you'll soon see the hut on Cape Royds where Shackleton and his men lived in 1908, over 50 years ago.'

HMNZS **Endeavour** ***and USS*** **Edisto** ***tied up at the ice front in McMurdo Sound. Mt Erebus in background***

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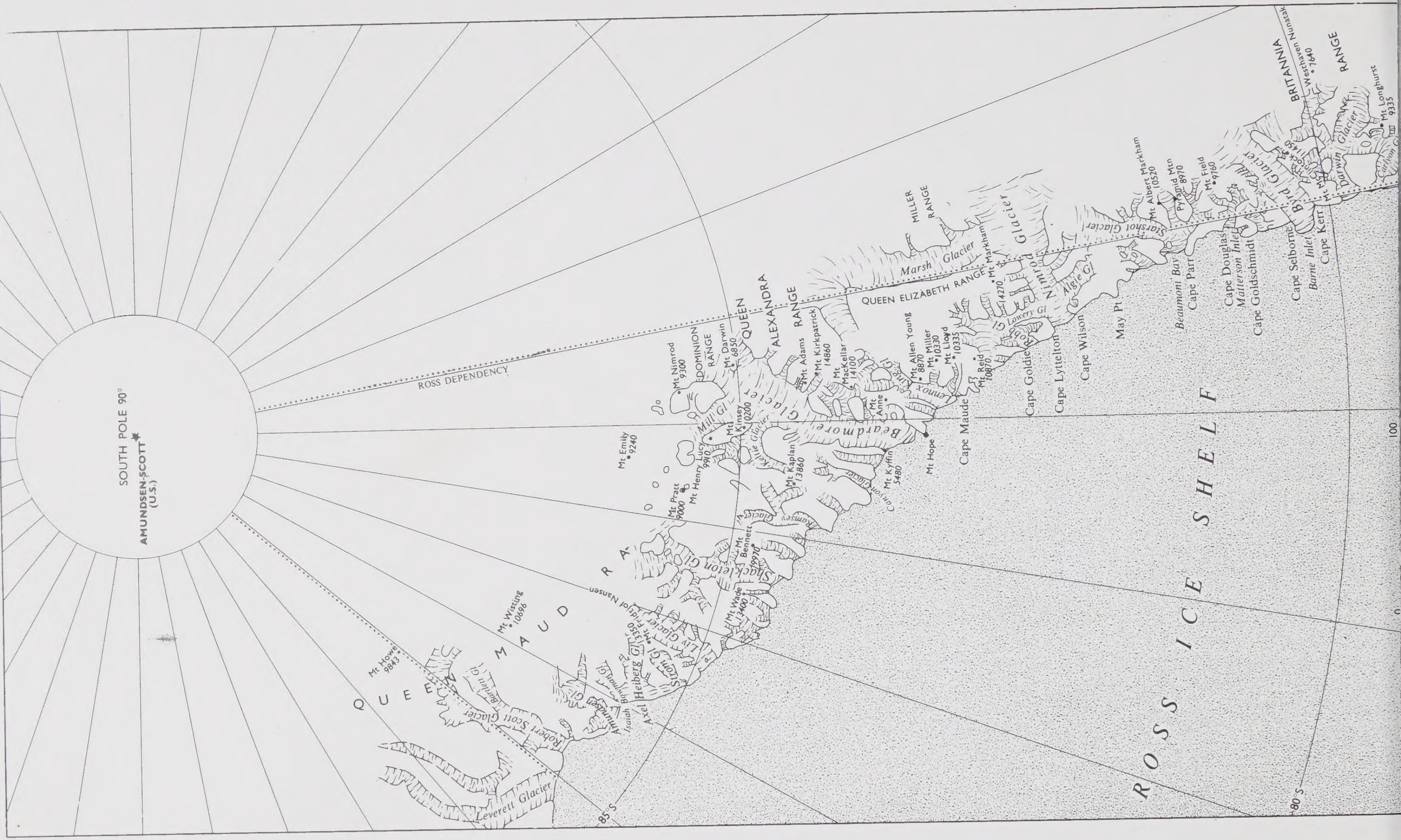
SOUTH POLE 90°
AMUNDSEN-SCOTT (U.S.)
ROSS DEPENDENCY
QUEEN MAUD RA
Mt Howe 9843
Mt Wisting 10696
Bartlett Gl
Robert Scott Glacier
Leverett Glacier
Amundsen Gl
Isaiah Bo
Axel Heiberg Gl
Mt Fridtjof Nansen 13350
Strom Gl
Liv Glacier
Mt Wade 13400
Shackleton Gl
Mt Bennett 9970
Mt Pratt 9000
Mt Henry Lucy 9910
Mt Emily 9240
Ramsey Glacier
Canyon Glacier
Mt Kaplan 13860
Mt Kyffin 5480
Mill Gl
Mt Kinsey 10200
Keltie Glacier
Beardmore Glacier
Mt Hope
Mt Nimrod 9300
DOMINION RANGE
Mt Darwin 6850
QUEEN ALEXANDRA RANGE
Mt Adams
Mt Kirkpatrick 14860
Mt MacKellar 14100
Mt Anne
Lennox King Gl
Cape Maude
Mt Allen Young 8870
Mt Miller 10330
Mt Lloyd 10335
Mt Reid 10870
Cape Goldie
Robb Gl
Lowery Gl
Cape Lyttelton
Cape Wilson
QUEEN ELIZABETH RANGE
Mt Markham 14270
Nimrod Glacier
Algie Gl
Marsh Glacier
MILLER RANGE
May Pt
Starshot Glacier
Mt Albert Markham 10520
Pyramid Mtn 8970
Beaumont Bay
Cape Parr
Mt Field 9760
Cape Douglas
Matterson Inlet
Cape Goldschmidt
Byrd Glacier
Cape Selborne
Barne Inlet
Cape Kerr
Mt Mc
Darwin Glacier
Mt Hamilton
Hatherton Gl
BRITANNIA RANGE
Westhaven Nunatak 7640
Mt Longhurst 9335
Carlyon Gl
ROSS ICE SHELF
85°S
80°S
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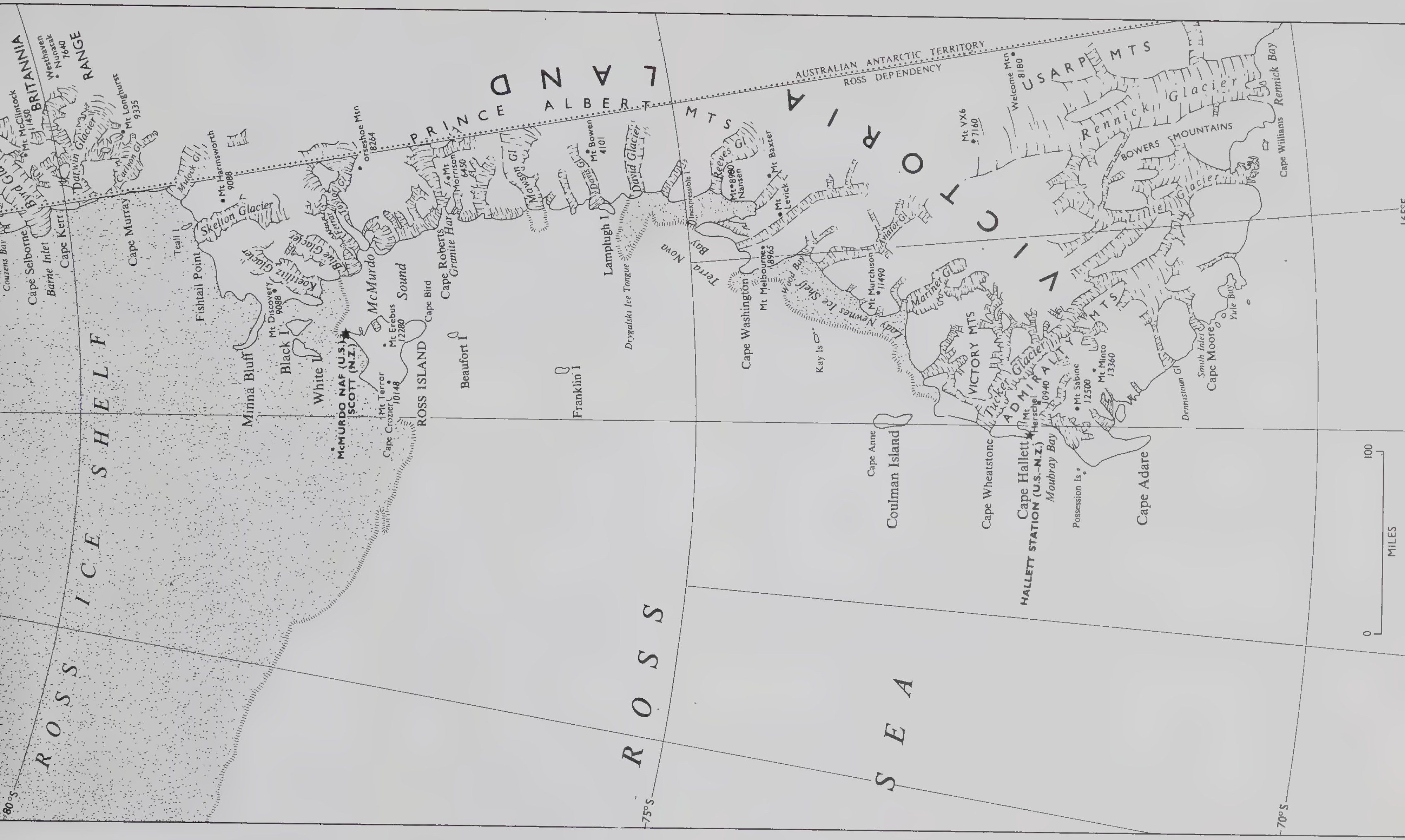


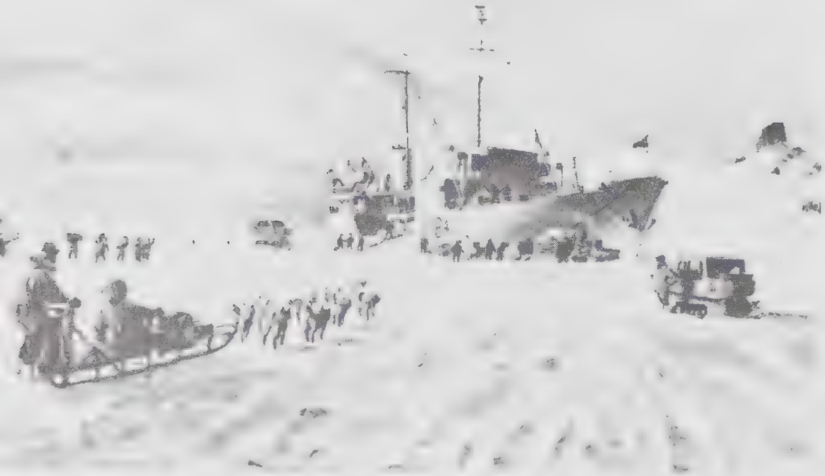
The Ross Dependency

Inset 1

BELOW: *Unloading the* Endeavour *at McMurdo*

RIGHT: *The United States McMurdo Base*

BOTTOM RIGHT: *Main Street, McMurdo Chapel at rear.*
Observation Hill in background



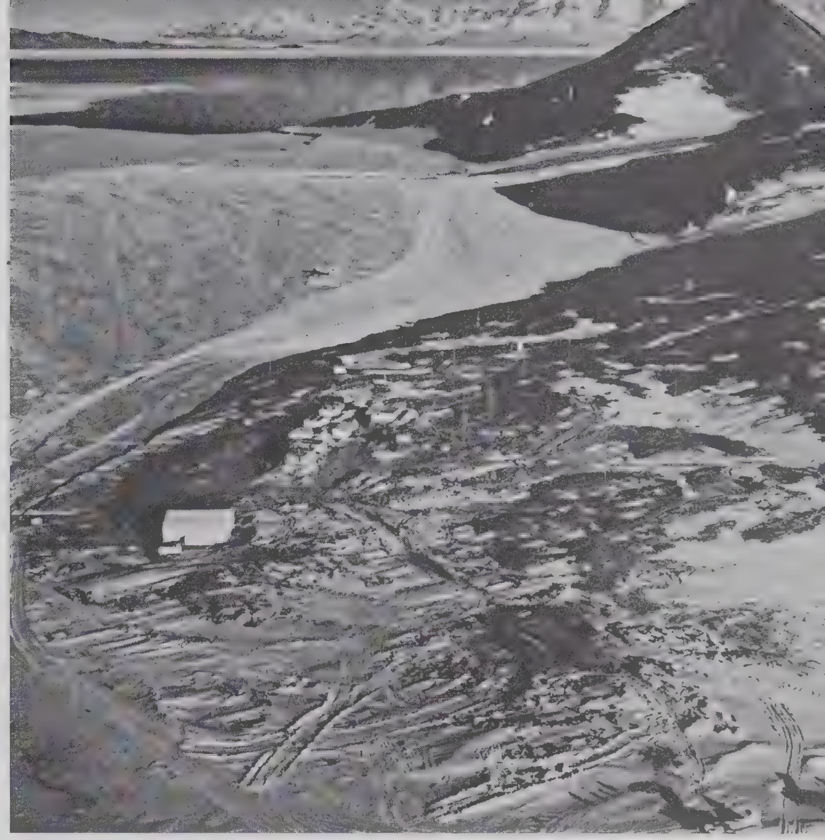
McMurdo

That bit about Shackleton made me feel that we had really arrived. We had a good map of the Ross Dependency – the 'sector' of the Antarctic which New Zealand has been officially 'administering' since 1923 – so we knew when we were off Cape Royds. And there, sure enough, was the tiny hut where Ernest Shackleton and his 14 companions spent the winter of 1908. It was only a fleeting glance, but we all three made up our minds that we would visit it if we possibly could. Would it be possible to go inside, we wondered.

Then we passed a spectacular cliff of ice about a hundred feet high, the end of the Barne Glacier which comes down from Mount Erebus into McMurdo Sound between Cape Royds and Cape Evans.

We were keenly looking out as we steamed past Cape Evans in the hope that we would see another famous hut, the one where Captain Scott and his party lived in 1911, the one which he set out from on the great journey to the South Pole, from which he never returned. But the first thing we noticed wasn't the hut but a cross, a big wooden cross standing out boldly on a little hill. 'That'll be in memory of Scott and the other men who died with him, I guess,' said Terry, and we all agreed. We were wrong: I'll tell you about that later. But now we saw the hut, a much bigger hut than Shackleton's. Decidedly, we must go and see those huts.

Now there was ice ahead. But away across the ice, about four miles away we guessed, we saw movement, what looked like men and vehicles, and some of them were coming over the ice towards us. Further away again we could see buildings. 'That's McMurdo, the biggest American base in the Antarctic,' one of our sailor friends told us. 'See the planes?' Yes, there were several big aircraft 'parked' on the ice. Then we heard the noisy approach of a helicopter. It passed almost overhead and we saw the pilot waving to us.



Scott Base, the Gap, Observation Hill (on Ross Island), McMurdo Sound, and the Royal Society Range (on the mainland)

We were now close to the ice. Almost dead ahead of us was a big hill, Observation Hill, we were told. On top of this hill there was another great wooden cross. Everybody now had to get ready to help with the unloading. Cables were thrown from ship

Scott's 1902–4 hut, with McMurdo Base, the Gap, and Observation Hill in the background, looking south

to ice and attached to 'deadmen' – big planks of wood which had been frozen-in to the ice. They made wonderful anchors.

We very soon noticed something else, some bright-orange-coloured vehicles with caterpillar tracks instead of wheels. 'Weasels' and 'Nodwells' we were told they were. On each one was painted a big orange kiwi on a black background and the letters N.Z.A.R.P. for New Zealand Antarctic Research Programme.

We didn't feel nearly as cold as we had expected. Of course we were well clothed. We were wearing heavy socks and underwear, big heavy jerseys and quite light but wind-proof outer pants and 'anoraks' with big furlined hoods. And of course warm headgear (Balaclavas generally) and thick gloves. Unloading at McMurdo was much like unloading anywhere else, and we soon warmed up with the exercise. Before long we were told to carry our own kitbags across to one of the 'weasels' for the journey to Scott Base. It was funny to think that we were walking on ice and that beneath us were goodness knows how many fathoms of McMurdo Sound.

Our cheery, bearded New Zealand driver – we found out afterwards that Jack was really a skilled diesel mechanic and would be wintering over in the Antarctic – pointed out lots of interesting things during the two-mile journey: another old hut, this time the one Scott's men built in 1902 on the *Discovery* expedition; the 'town' of McMurdo, its streets surprisingly muddy and with very little ice or snow on them; the local 'store'; the church, used by all denominations. We were very surprised to drive through such a large and busy place. Jack told us that there might be as many as a thousand men – but not one woman or child – living at McMurdo during the few months of summer.

'What about the winter?' I asked. Jack answered that more than 100 men would be wintering at McMurdo, the biggest town in the whole of the Antarctic. At our own Scott Base there are only 13 or 14 men during the winter.

Ahead of us now was a dip between two hills, Observation Hill and Crater Hill, and we drove on at quite a good pace through 'The Gap'. All these names were first used when the *Discovery* men lived here (on the ship) in 1902 and 1903. As we began to rise we saw, on the side of Observation Hill to our right, a big building, and to our astonishment Jack told us it was the Atomic Power Station. And then, stretching away to the South was a great white plain, broken by two big islands, White Island and Black Island. This, then, was the Barrier, the white road over which Scott had sledged with Dr Wilson and Lieutenant Shackleton in the summer of 1902–3 for a couple of hundred miles. Then in

1908–9 Shackleton and his companions had set off from Cape Royds along the same road with Siberian ponies drawing the sledges. They passed Scott's 'farthest south' after less than a month's travelling, but a few days later they saw mountains ahead of them, and then a huge glacier which was the only possible way up. The last of the ponies was lost down a huge crevasse on the glacier, a great gaping hole in the ice which had been concealed by a snow bridge. So now they had to drag the heavy sledges themselves and they struggled on up the glacier and on over the 10,000 feet high icecap until they were within a little over a hundred miles from the South Pole. It was January 9th, 1909. Now their food was dangerously low and there was nothing for it but to turn back. They reached the old 'Scott' hut, which we had just been looking at, in 49 days and were picked up by the little *Nimrod* and taken back to Cape Royds.

Scott came back again in the summer of 1910–11 and spent the 1911 winter with a team of 25 men at Cape Evans. He had dogs and ponies and three motor sledges. But the motors were not of much use, and when the Southern Party set out, leaving the Hut Point Hut (the *Discovery* one) on November 3rd, Scott knew that they would probably end up by pulling the sledges themselves – as they soon had to do. When the last supporting party returned on January 4th they were only 150 miles from the Pole. But already their strength was ebbing. They reached their goal on January 17th, only to find that the great Norwegian explorer Amundsen had beaten them by a month. Cold, worn out and bitterly disappointed, they set out on the 'homeward' journey, knowing very well that it would be touch and go. Evans died at the foot of the great glacier, the Beardmore; then Oates, so badly frostbitten that he knew that he was holding the others back, nobly walked out of the tent to die in a raging blizzard. After three more days of painful struggle, the other three, Wilson, Bowers, and Scott himself, were pinned down in their tent by a terrible blizzard which lasted at least ten days. And there they died.

The Cross on Observation Hill in memory of Scott, Wilson, Bowers, Oates, and Evans

Up there on Observation Hill where today the cross stands out against the sky, their friends used to look out anxiously across the Barrier hoping against hope until all hope was gone. And some of the small groups who went out to lay or replenish depots and to make journeys here and there, on their way back to Hut Point came up over the Gap which we were now crossing in the other direction – so much more easily. They were looking forward, desperately sometimes, to reaching the shelter of the hut which we had just seen. And now I found myself gazing away to the south across that same Barrier.

Scott Base

'Here you are!' Jack's cheery shout brought me out of my day-dreaming with a jerk. 'Welcome to Scott Base!'

So this was New Zealand's farthest outpost. On a slight rise to our left lay a cluster of squat yellow buildings, close together most of them, and flat-topped. After we had passed the gap and were travelling over the sea ice, away to our right stretched the vast white expanse of the Ross Ice Shelf, the Barrier. But to our left there was some rough-looking ice and then the southern 'shore' of Ross Island. But there was no sea, only ice; ice and snow in all directions, rising gradually beyond Crater Hill and Castle Rock to the soaring peak of Mount Erebus, its cratered summit about 25 miles away to the north-north-east.

Mealtime at Scott Base

As we drove up to the Base, we could see that the huts forming the main group of buildings were linked up by a covered way, a kind of corrugated iron tunnel. Jack explained that during the winter, and sometimes during the summer too, the blizzards are so fierce that it would be unsafe to cross in the open from building to building. Men have become completely lost only a few yards away from 'home'. But with a set-up like this you could travel from your sleeping quarters to, say, the mess room without going out in the open at all.

Several bearded men came out and gave us a warm welcome to Scott Base. The deputy leader, Bob, was one, and he took us in and along the covered way to the hut we were to sleep in. We dumped our kitbags, and then went along to the leader's office. A few cheery words from him and then Bob said, 'How about chow? You're just in time.' We were soon to learn that the New Zealanders and the Americans over the Gap were very good friends, and it was not uncommon to hear a Kiwi using words which were obviously American.

So off we went to our first meal. The mess room was a bright, pleasant room, warm and cosy. And the kitchen opening off it was first-rate too, with its big drip-oil stove and plenty of facilities for washing up. Each man washes his own dishes and Bob told us that we would have to take our turns at being 'house-mouse' for the day, tidying up, washing the cook's dishes, getting snow to provide the water for the base, getting rid of the rubbish (down a tide-crack some little way from the base) and a hundred and one other necessary jobs. Then we (whoever it was) would have to stay awake all night taking note of temperature doing the round of all the buildings in case of fire, and waking up the cook in the morning. Of course it would be daylight all the time.

But – oh yes – we were going to have breakfast – or was it dinner? It took us some time to get used to the routine when there was no night to remind you to go to bed, no rising sun to say 'Time to get up'. Well, it was a really enjoyable meal anyway. Nothing fancy, but good, well cooked food and plenty of it. *All* the meals were good. The Antarctic Division (a section of the Department of Scientific and Industrial Research) which 'runs' Scott Base, always makes sure that a really good, experienced cook is selected. One winter, for example, the cook had been one of the cooks on *Queen Mary*. During the summertime, with so many summer visitors (like us) and VIP's (like visiting Members of Parliament), the cook has an assistant, also as a rule an experienced man.

I asked some of the boys how long ago Scott Base was built. I should have known, of course, because it was built when the New Zealand team under Sir Edmund Hillary went down to prepare the way for Dr Fuchs, who was preparing to travel right across the Antarctic Continent from the Weddell Sea, south of South America, to the Ross Sea. He ended his 2,000 mile journey at Scott Base. One of the first things I noticed as we neared Scott Base was one of the crossing party's big Sno-cats – still in use.

The crossing was made early in 1958. It was in the summer before this, that Scott Base was built. A base was needed for Hillary's party, and also for the New Zealand scientists who were to carry out research in connection with the IGY, the International Geophysical Year, and it was only common sense to house the two teams of New Zealanders together. Pram Point was chosen as the site after it proved too difficult to land stores and equipment at Butter Point, at the foot of the Ferrar Glacier on the western side of McMurdo Sound.

Why the name Pram Point? Well, when Captain Scott's team was based at Hut Point in 1902–4, his men often passed this way going further south, and a pram, a Norwegian name for a kind of small boat, was used when there was open water between this point and the solid ice to the south, as sometimes happens.

Construction began, we were told, with the erection of the mess hut in January 1957, and before the summer ended and only the winter party of 23 men was left here, there were seven huts: a laboratory building, the mess hut, sleeping quarters, hospital and more sleeping quarters, the administration building, ablutions block, and generator room workshop. There were more buildings now, ten in the main block, and several outlying buildings like stores building (originally a hangar) and various scientific huts. Scott Base is a very compact, well arranged Antarctic station.

Clearing up the Base after a blizzard

Scott Base from the Pressure Ridges

Many prominent foreign visitors with wide experience, Bob told us, have described it as one of the finest bases in the Antarctic.

Terry asked Bob how many other countries were engaged in Antarctic work besides the United States and New Zealand. 'At present,' he answered, 'there are eight.' Nearest to us and the American McMurdo base is the French station, Dumont d'Urville, about 800 miles west of Cape Adare. Cape Adare is the nearest point of the Antarctic continent to New Zealand. Then in other parts, as well as two or three other American stations, there are bases occupied by Australia, Argentina, Belgium and Holland, Chile, South Africa, the United Kingdom, and the U.S.S.R. Most of these countries have several bases: the United Kingdom has seven. Norway and Japan also had stations in the Antarctic for some years, during and after the International Geophysical Year, and the Japanese, anyway, intend to go back again. From 1957 till 1964 New Zealand and the United States had a joint station at Cape Hallett, some 80 miles south of Cape Adare. It might have been occupied still if it had not been for a disastrous fire which destroyed the main science building in 1964.

How many men altogether? Well, that has varied a lot, but I'd say round about 2,000 in the summer time and about 700 wintering over. The Americans have easily the greatest number, nearly 300 wintering over altogether, while the United Kingdom, Argentina, and the U.S.S.R. each has nearly 100 men wintering at its various bases.

But there is no danger of the Antarctic becoming overcrowded. Those 2,000 men in the few summer months are scattered over an area of nearly six million square miles, an area as big as Europe and Australia put together. Most of them are in the coastal stations – some much further north than Scott Base in what we 'tough guys' call 'the Banana Belt of the Antarctic' because the temperatures are not nearly so cold as at Scott Base or McMurdo. On the other hand, the Americans have two under-snow stations a long way in from the coast, at the South Pole itself and Byrd Station; while the Russians too have an inland station, where the coldest temperatures ever known on earth have been recorded. The thermometer once fell right down to –127° F, 159 degrees of frost.

We soon realised that New Zealand's part in Antarctic research is relatively quite a small one. But we can safely say that our New Zealand effort is as good as anybody's considering the size of our population: no country, they say, makes a bigger contribution per head than we do.

I have already told you about the meals at Scott Base. The sleeping quarters for the staff are really good too. Of course in summer time it is a bit crowded and 'summer personnel' like us have to doss down using sleeping bags in whatever space there happens to be available. But we were quite comfortable; and during the winter the boys all have their own little cubicles and so enjoy a certain amount of privacy. Of course the main buildings are all comfortably heated, though New Zealanders don't like the temperature as high as it is in the American quarters.

Water is a big problem at all Antarctic bases because, to start with, there is *no* water. There is no rain. All precipitation is in the form of snow. So one of the main chores is to go out with a tracked vehicle to a 'safe' spot and carry back a load of pure ice or compacted snow to the base, where it is shovelled into a snow-melter. The water is then piped to the various parts of the camp. But you can't have a bath whenever you feel like it: you take your turn, and it is quite a complicated job to turn on all the right taps when your turn does come.

One thing we noticed straight away was that everybody seemed very busy. We could see at once what some of them were doing: the two cooks, the radio operator, a group of men building a new hut which was to serve as a winter storeroom. But in the science labs we were amazed at the mass of complicated machinery and instruments, and it was a long time before we discovered what particular scientific 'discipline' each man was interested in and what all the instruments were for.

Once during the first day when we were having another talk with the leader in his office, he was telling us about the importance of radio communication in the Antarctic. 'Let's go and see who Peter is talking to just now,' he said. 'If you're lucky you might be able to listen in to one of the field parties.' Stupidly, I'd been forgetting that all the New Zealanders in the Antarctic were not at Scott Base; but the leader showed us the big chart on his office wall indicating where all the field parties were at the time. We discovered that two parties were working hundreds of miles away down to the south, one using motor toboggans, and the other dog sledges, just as Scott's men used to do.

Ice for water

So we were quite excited when we got into the radio room and heard voices coming in, not very clearly, but Peter with his long experience was obviously able to understand what was being said without any trouble. 'Oh, that's the ice-shelf party,' said Harry. (Harry was the leader: we soon learned that everybody here calls everybody else by his Christian name – or some nickname.)

Geologists in the field

A field-party leader contacts Scott Base on his field radio

'They're out on the Shelf about fifty miles from here. What are they doing? Oh, lots of things: measuring the movement of the ice, examining the ice at various depths and taking samples of it for scientists back in New Zealand to measure, for instance, the amount of radioactive fallout in it . . .'.

'Can they . . . is there any difference when somebody lets off an atomic bomb?' asked Terry.

'Too right,' Harry replied. 'Why, they can dig down to the ice formed from snow that fell in 1945 and detect the sudden rise in fall-out caused by the Hiroshima bomb.'

We were moving out but Peter shouted, 'Hang on a minute. I think George will be coming in.'

'Who's George?'

'George Thomas. He's in charge of the southern geological party. They're working down in the Geologists' Range and it's just about time for their sked.'

This was exciting. Harry had been telling us about George's team – (George, himself a geologist, another geologist, a surveyor, and a field assistant) who were working in 'unknown' country about 350 miles south of Scott Base and about 50 miles inland from the Ice Shelf. So we listened hard, and sure enough, we heard the voices of George and the surveyor Dave, and could pick up something of what they were saying. They had evidently discovered some very interesting fossils millions of years old – but they were also very anxious about a 'resupply': it sounded as if they were running short of food.

Harry explained to us that this team had been flown down by an American DC3 aircraft, with their dogs and sledges, near to the area they wanted to examine and map. The weather had not been good enough to allow a resupply on the date planned and some items of food were running low. 'They're not starving yet, you know,' interjected Peter. 'Only Jake's very fond of sugar and that's pretty short.' However, it was almost certain, the weather men said, that a flight could be made next day and that supplies would be dropped by parachute. 'That'll sweeten Jake up,' said Peter.

Just then there was a loud, continuous noise like an outsize telephone bell and Harry said, 'It's alright! It's the fire alarm.' Very quietly he added, 'It's only a practice. But come on with me.' Outside the radio room, men were running along the covered way, most of them carrying fire extinguishers. We followed Harry, at the run too, and were soon in the hut at the far end of the covered way. There was no sign of fire and soon the All Clear signal was given. But believe me, there was no make-believe about the speed with which all the men had got to the place where the fire was supposed to be. Every man obviously knew exactly what he was expected to do. They had all had some training at a special camp before they left New Zealand. In fact, several of them had had an intensive training course in fire fighting at a fire station in Wellington. Harry told us that fire is Danger Number One in the Antarctic because there is no water to fight a fire with. Over the years since the start of the IGY there have been several destructive fires. We had already heard about the big blaze at Hallett Station. But there had been bad fires also at McMurdo and at British, French, Argentinian, and Russian bases. Many lives had been lost too. At the Russian base, Mirny, in 1960 eight men were killed when they were trapped in a blazing meteorological building during a fierce blizzard with the temperature at 50 degrees below zero. During the summer of 1951–52 a whole French Base, Port Martin, was destroyed. Fortunately there was no loss of life and as the changeover was taking place at the time, most of the men were taken back to France on the relief vessel. Frequent alarms are a feature of life at Scott Base as at other Antarctic stations, and everybody treats them very seriously.

Before we turned in that night Bob gave us some exciting news. 'You three blokes,' he said, 'are in luck. There's a chopper flying out to Cape Evans tomorrow, and Harry has arranged for you all to go too. And you will have a companion.' He wouldn't tell us who it was; my guess was the American Admiral.

Great Men Lived Here

We had a good night's sleep, although I found it a bit hard getting to sleep in broad daylight. Some chaps, we were told, get the 'big eye' and do all sorts of things – read, play cards, argue with one another, or just roam around – to make the 'night' pass more quickly. But we three soon became used to it and going to bed with the sun still shining didn't bother us.

Well, after breakfast Bob drove us in a weasel over the sea ice and through the Gap to McMurdo. There, sure enough, we were introduced to the Admiral. He was very friendly and said he was glad we were coming with him to see Scott's old hut. 'But come on and meet Sir Charles,' he said. Who on earth could Sir Charles be? There was a twinkle in Bob's eye, and as we were walking along past the famous 'Chapel of the Snows' to one of the other huts, he told us. 'You are going to be in good company,' he said. 'You know all about Scott's last expedition, don't you? Do you remember C. S. Wright? He was the physicist in that group of young scientists. Well, here he is!'

Looking good-humouredly at us was a big man, not a young man like most of our new friends, but obviously still alert and strong in spite of his years. We were soon chatting away like old friends and we were thrilled when we realised that we were going to see the famous old hut in the company of one of the men who had lived in it for two whole years, 1911 and 1912, except when he was away out sledging; he and other members of the expedition used either a team of dogs or hauled the heavy sledge loads themselves.

Before we had quite recovered from this pleasant surprise we were climbing into the 'belly' of the 'chopper', a big Sikorsky helicopter, and the rotors were whirling round. Soon we rose steeply and had a wonderful view of the whole of the big American

The old and the new: huskies and a helicopter

Sir Charles Wright examines ice crystals in the old hut

Inside the darkroom during restoration

base as we moved north close to the western shore of Ross Island, over Glacier Tongue, and saw ahead of us the Dellbridge Islands; Tent Island, Inaccessible Island, names recalling incidents in the exciting early history of this McMurdo Sound area. We passed over the icebreaker *Glacier* which was clearing the waterway of ice that had drifted into it; and then Sir Charles, who seemed quite excited himself, pointed out to us a long low building just a few yards inshore from where the fast ice seemed to meet the actual coast.

'Here you are, boys!' he explained, 'That's where I lived the two most exciting years of my life.'

We came down on a fairly level stretch of snow quite close to the hut, and we kept as near to Sir Charles as we could as he opened the door and we walked into the famous hut. It was dark inside but one of the men lit a lantern and we could see that we were in a sort of porch. We moved through another door and then we were standing beside the cook's stove. Behind it were shelves with tins and bottles, the labels quite fresh and clear to read: Tripe and Onions, Army Rations, Cod Roes, Finnan Haddocks, Mango Chutney, Midget Gherkins, Monserrat Limejuice, and so on.

Then there was a sort of partition made of boxes, and we went through into what Sir Charles called the Wardroom, the part of the hut where in Scott's time the officers and scientists lived. 'Scott was very much the Naval Officer, you know.' Here there were wooden bunks grouped in twos and threes, and Sir

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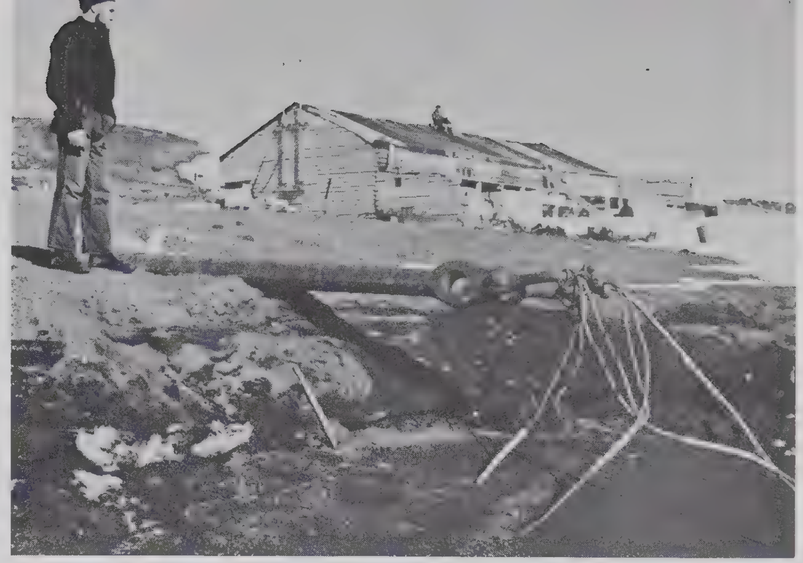
Charles told us who slept in each bunk. Captain Oates' bunk was very interesting: there was pony harness hung up here and there and some curious bamboo and wire things which Sir Charles told us were pony snow shoes. We saw Scott's own cubicle, with a low bed and sleeping bag, and various articles of clothing and books, a pipe, and so on. 'Is it just as they were in Scott's time?' asked Terry. 'Not quite,' was the reply. 'During that last winter, 1912, when we knew that Scott and Bill Wilson and Birdie and Titus Oates and Taff Evans must be dead, we gathered all their gear together to take home when the ship came, in the summer. But a few years ago a team of New Zealanders spent a good bit of the summer here digging out all the ice – the hut was almost completely full of ice, they tell me – and then they "restored" the hut as well as they could to what it did look like in Scott's time. But of course, you know, there was another party here a few years after us, in 1915 and 1916.' We didn't know that, as a matter of fact, so our new friend told us the tragic story.

'Shackleton wanted to make the first crossing of the Antarctic Continent, from the Weddell Sea to the Ross Sea, by way of the Pole: exactly what Fuchs did in 1957–58. Just as Fuchs sent Hillary and his New Zealanders to lighten the last stages of his journey by laying depots of food and oil between McMurdo Sound and the Pole, Shackleton sent a party down on *Aurora* to lay depots for him. That was in the 1914–15 summer. Some depots were laid that summer, and *Aurora* was frozen in, on purpose, just out in front of the hut there. But when the most southern party got back to the hut, they found to their horror that the ship had been blown out to sea on May 7th and had not been seen again.'

'Come and look at this,' interrupted Bob. He took us outside and showed us a big anchor half buried in the sand and gravel of the beach. Attached to it were a number of cables, broken off near the anchor. 'That was one of the anchors and those were the cables that snapped that night.'

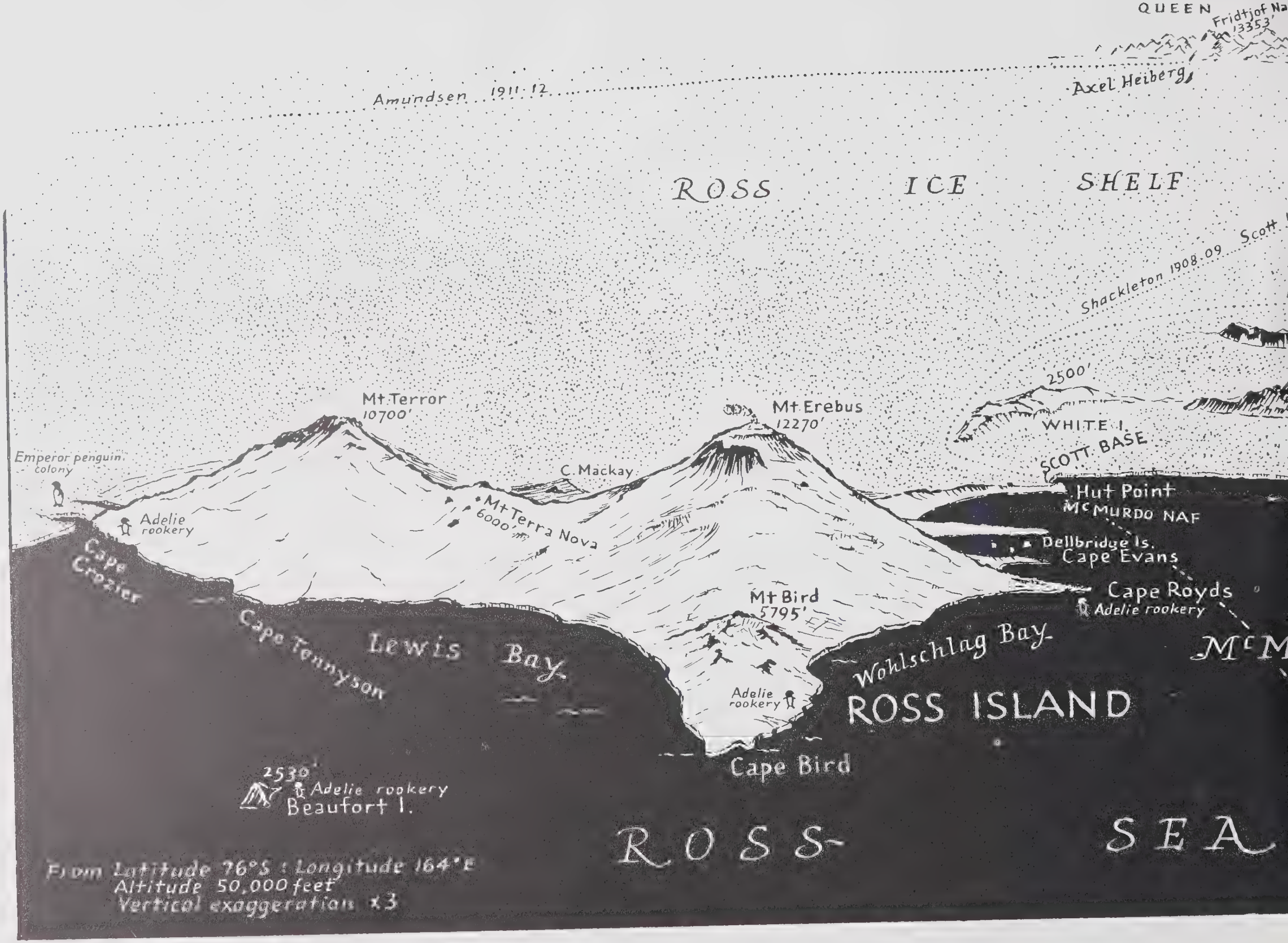


Scott's hut at Cape Evans, with the anchor which held the Aurora

Sir Charles then told us that ten men were ashore at the time, including Captain Mackintosh of *Aurora*, and they were in a desperate situation. They had intended to winter on the ship, and practically nothing had been taken ashore. So the ten men had to live as best they could throughout an Antarctic winter on what food they could find in the hut and the seals they were able to kill. Their greatest worry, though, was clothing. They had what they stood up in, and nothing else. As they had no fuel, they had to heat the hut and turn snow into water and cook their meals, by burning seal blubber in the big cook's stove. Blubber soot still covered the walls.

So these unfortunate men had to live the whole winter in *that*, I thought to myself. And they had no change of clothes. They couldn't even wash, let alone bath.

The restored hut at Cape Evans


QUEEN
Fridtjof Na
13353'
Amundsen 1911-12
Axel Heiberg
ROSS ICE SHELF
Shackleton 1908-09
Scott
2500'
Mt Terror
10700'
Mt Erebus
12270'
WHITE I.
SCOTT BASE
Emperor penguin colony
C. Mackay
Hut Point
McMURDO NAF
Adelie rookery
Mt Terra Nova
6000'
Dellbridge Is.
Cape Evans
Cape Crozier
Cape Royds
Adelie rookery
Mt Bird
5795'
Cape Tennyson
Lewis Bay
Wohlschlag Bay
McM
Adelie rookery
ROSS ISLAND
Cape Bird
2530'
Adelie rookery
Beaufort I.
ROSS SEA
From Latitude 76°S : Longitude 164°E
Altitude 50,000 feet
Vertical exaggeration x3

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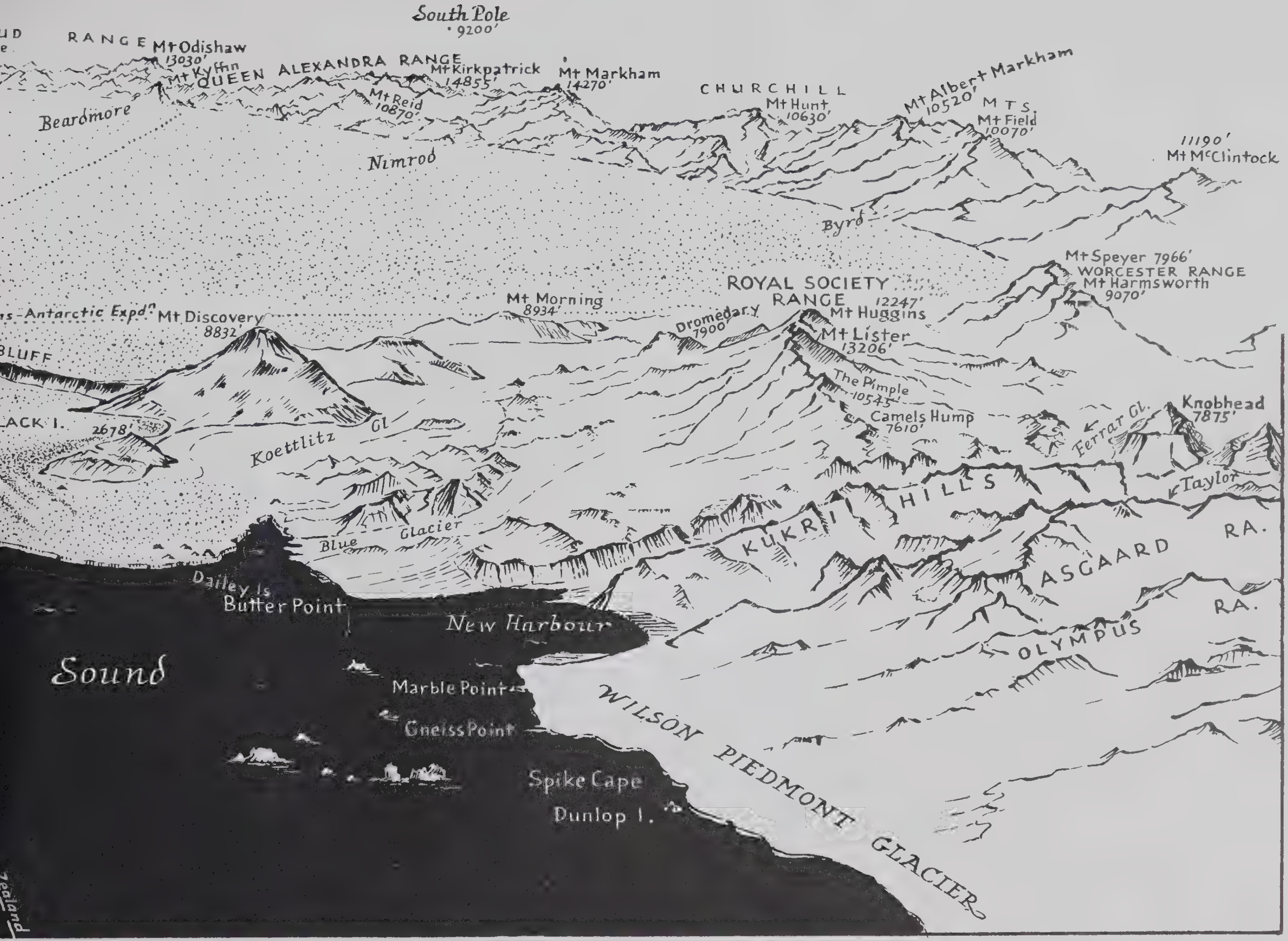


Drawn by the Department of Lands & Survey, New Zealand.

Sir Charles went on: 'All the time they kept remembering Shackleton's plans. There was still a depot they were supposed to lay, over 400 miles to the south, at the foot of the Beardmore Glacier. This depot *must* be laid at all costs: Shackleton would be relying on it. They little guessed that in fact 'The Boss', as they called him, would not be coming at all. His ship had been caught in the ice, crushed and sunk. But they didn't know that. There was no radio in those days. So on October 1st nine of them set off in the bitterly cold spring weather, wearing – look – those trousers.' And he pointed to a pair of, well, 'bags', roughly made out of old canvas, hanging up by one of the bunks. 'They wore those, sledging in an Antarctic spring. Of course they froze hard, just like boards. Fortunately they had four dogs, all that had survived the earlier journeys. There were six men in the final party. Before they reached the spot where the depot was to be placed, one, Spencer-Smith, was struck down with scurvy. They had to leave him alone in one of their two tents while they pushed on and laid the depot. On the way back they picked up poor Spencer-Smith and they dragged him on a sledge for 350 miles, for 40 days, and then he died when they were in sight of Mount Erebus – almost "home".'

'The five survivors reached Hut Point on March 10th. They could find practically nothing in the hut there at all and they just managed to live on the seals they were able to kill. They all now had scurvy. Then on May 8th Captain Mackintosh and Hayward couldn't wait any longer and they set off together for this hut, although the others warned them of the danger of travelling over the thin ice so early in the winter. The others, Joyce, Richards, and Wild, waited till July 15th, when the ice was much thicker, and reached the hut here safely. But Stevens, Jack, Gaze, and Cope told them that Mackintosh and Hayward had not arrived.

So it was a sad home-coming.

'The second winter passed and they were preparing for a third when on January 10th 1917, Richards went outside – and saw the ship. A relief party had arrived in *Aurora* herself. Before they left for New Zealand two of them put up that big cross out there on Wind Vane Hill in memory of their three friends.'

So that cross wasn't in memory of Scott as we had thought. His memorial cross is the one on Observation Hill near Hut Point. We saw later that a plaque had been placed by the New Zealand Government at the foot of the Cape Evans cross, and we were pleased when Bob told us that it was unveiled in 1963 by the Governor-General of New Zealand, Sir Bernard Fergusson.

We wondered why we had never heard before about these brave men. But it all happened during the great world war, the first one, and men everywhere were so much concerned about the war that they soon forgot all about the ten men who fought against frightful odds to make sure that the depots were ready for Shackleton – who never came.

There was much else to see in this old hut: a well-stocked laboratory, the bunks where famous men had slept (we were specially interested, of course, to see the bunk our friend had occupied), old, dirty, tattered clothing, books, papers, and magazines 50 years old . . . But the 'chopper' pilot was looking anxiously at the sky and was keen to get back to McMurdo before the promised blizzard started. So we dragged ourselves away from this place of so many memories. In no time we were back at McMurdo and as we drove in the weasel over the Gap a 'mild' blizzard did spring up and at times it was hard to see the track ahead of us. We were sorry we had not had time to go on to see Shackleton's hut at Cape Royds, but hoped we would have a chance to see it later.

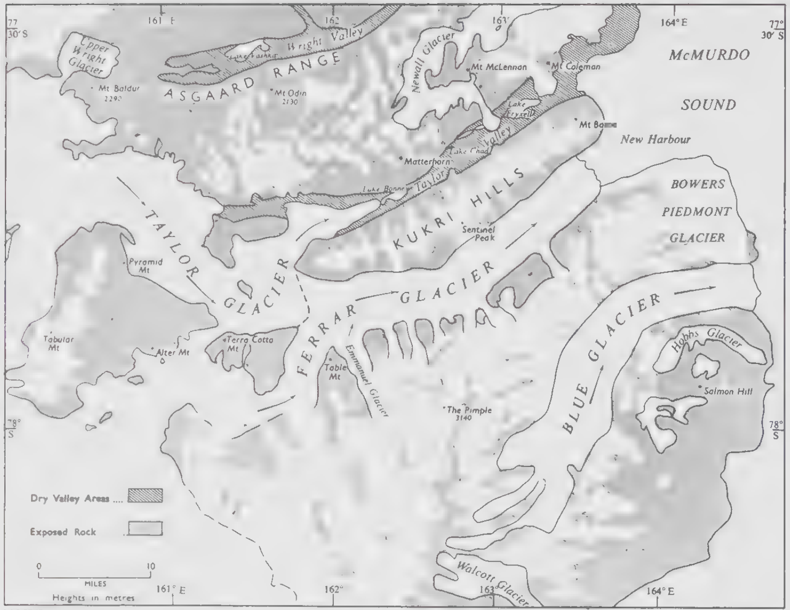
ON PRECEDING PAGES: *Two views of Mt Erebus*
LEFT: *From Cape Crozier, showing the ice-front or 'barrier'*
RIGHT: *From Cape Armitage, the tip of Hut Point Peninsula*

A Dry Valley

Next day we were told what each of us would be doing during the next few weeks. We were not tourists, you know, and each of us was keen to get on with whatever job was given him. I found that I was to go out and join a party from the Victoria University of Wellington in the Taylor Valley. Bob was to work in the lab at Scott Base. Bob intends to be a scientist so that he was pleased he would be working with the young scientists who would be spending the winter at the base. Jerry, who is very interested in zoology, was to join a University of Canterbury biological team at Cape Royds where there is a penguin rookery, so he was happy too. I'll get the two of them to tell you about their doings later on.

Two days later a 'chopper' was to fly out to the Taylor Valley on a 'resupply mission' and I was to travel on it. In the meantime I made use of the Scott Base library to find out all I could about what everybody told me was a very interesting place. The Taylor Valley is named after the late Professor Griffith Taylor of Sydney, a member of Scott's Last Expedition. He was leader of the Western Party which made the first careful examination of this strange valley. Sir Charles Wright was one of his three companions. They didn't discover it. It was first seen by Scott himself on his earlier expedition in 1902–4. When Scott and Wilson and Shackleton returned to Hut Point from their great southern journey in February 1903, and found that the *Discovery* could not be freed from the ice, he and most of his men stayed on for another year. One of the main journeys of that second summer (1903–4) was to strike west across the mountains that fringe the Victoria Land coast in order to find out what lay beyond them. After hauling their sledges for nearly a month Scott and two sailors, Lashly and Evans (the same Evans who later went to the Pole – and died – with him), left their companions at what they thought was the head of the Ferrar Glacier and fought their way up a series of ice falls to the great Polar ice plateau west of the ranges. They trudged west across the plateau for eight days and had covered 200 miles before they turned back. On the return journey they had a very narrow escape from death: Scott and Evans together went about 20 feet down a crevasse and only the fact that Lashly was still on top saved their lives. When they reached the Solitary Rocks about half way down the glacier from the mountains to the sea, Scott decided to follow what seemed to be an arm of the glacier going north. When they had gone some distance they found that it turned east towards the sea (McMurdo Sound) and they had not gone many miles when to their astonishment the glacier suddenly petered out: they heard the surprising sound of running water and saw that melt-water from the terminal face of the glacier was running into a frozen lake. From this point down towards the sea there was no ice at all except in the few lakes: it was a 'dry' valley.

Scott and his friends had to turn back there, but a party led by Armytage in 1908–9 went in from the coast and examined the lower part of the valley. Then in 1911–12 Griffith Taylor, Debenham, and Wright made their much more thorough examination of this strange place, which seemed like an oasis in the desert, a desert of snow and ice. They made another surprise discovery, that the big Ferrar Glacier is really fed by a southern arm, while the upper part, which Scott had naturally assumed was the Upper Ferrar Glacier, was really an independent glacier which turned north and then east until it ended as I told you, leaving the lower part of the valley free of ice. The two glaciers lie as it were back to back, just coming together at the one place near the Solitary Rocks, as you can see on the map (page 30).



L&S 37/17

Drawn by Dept. of Lands & Survey, Wellington, N.Z

It is not surprising then, is it, that I was looking forward to seeing this remarkable Dry Valley? The helicopter came to Scott Base for us this time as there were stores to put on board, and two of the New Zealand summer team came to help with the unloading. We crossed the 40 mile wide McMurdo Sound in about half an hour and then we were looking down on the Blue Glacier, then the Ferrar Glacier and the Kukri Hills.

But then the nature of the country below us altered, the snow and ice vanished and there was a desert-like valley floored with boulders and shingle. Not a tree or a blade of grass of course; we didn't see a plant of any sort all the time we were in the Antarctic except just in a few places some patches of algae and moss. The algae grows in sheets and strands around the lake shores. One of the best descriptions of this valley I have seen was written by Sir Raymond Priestley: 'Large patches of gravel mixed with erratic boulders of every description and size . . . segmented by watercourses which are bordered by flats or gravel and spread out before reaching the sea over large alluvial fan-shaped mud flats'.

Our helicopter came down on one of those frozen lakes I told you about, Lake Bonney. This lake, like many others in the area, is not completely frozen but has a thick sheet of ice floating on top. The University men's camp was on a gravel flat beside the lake. There were four of them in two polar tents. Their leader, Alan, gave me a warm welcome and told me he had plenty of work for me to do. Teams from the University, he told me, had been coming to the Antarctic every summer since 1958–59, and not only to the Dry Valleys. In fact, before that, in 1957–58, two of the University geology students had done some exploration of their own in this area.

These early explorers of the Dry Valleys (there are similar ice-free valleys, the Wright and the Victoria, further North) were very interested and puzzled to find quite a number of dead seals in these valleys, often a very long distance from the sea. Some, it was found out later, had been dead for hundreds of years, seal 'mummies'. Scientists are still puzzling out why these seals came so far inland to die.

Alan explained to me what he and his team were doing. This time they were concentrating on the lakes, especially this Lake Bonney. Two of the men were geologists and I would be spending a lot of my time helping them. My first job, though, was to help unload the 'chopper': cases of food, scientific apparatus and materials, replacement tools, containers for rock specimens and water samples – and, to the delight of the boys, some fresh fruit

A frozen lake in the Taylor Dry Valley. Glacier in background

that had been flown from Christchurch that morning. You see, it takes only about eight hours to fly from Harewood Airport to McMurdo, though it takes a good week by sea. This, was a most unusual happening. As soon as the helicopter was unloaded it took off again for McMurdo.

It was great fun camping with these students, who were so interested in the work they were doing and at the same time so full of high spirits. Life here was quite different from life at Scott Base. We did our own cooking, and that meant for a start collecting water in buckets from the melted out edge of the lake. (We didn't wash so very often.) The cooking was done on a pressure cooker heated over a Primus – much the same sort of Primus as the old-time explorers used. The meals were good anyway. We generally had scrambled eggs or an omelette for breakfast, made from egg powder. Lunch was just biscuits with jam or marmite or something like that. The big meal at 'night' was generally a stew made of meat bar, freeze-dry meat and freeze-dry vegetables, sometimes with the addition of soup powder. We also had tinned fruit very often. The University boys told me that their rations were more lavish than those of most field parties – though they didn't say why. And of course the sledging teams hundreds of miles from Scott Base had much more spartan meals still. But even those tough-living men had what they called a 'goody-box'. Every two men had a boxful of 'eats' weighing 50 lb and this was supposed to last a month. They made it up for themselves before leaving base, putting in whatever extras they thought they would most enjoy; things like extra tins of fruit, sweets, more sugar, and so on.

I should have mentioned that once put down in the area where they were to work, the University team didn't as a rule do any long-distance travelling; so they had neither dogs nor toboggans. Whatever they had to carry from place to place they 'back-packed', and that, believe me, was very hard work. Some of these students carried loads of up to 60 lb for distances of 20 miles moving from camp to camp.

Lake Bonney is about four miles long. It is always for the most part frozen over and the ice this year was about 12 feet thick: I know because I helped Bert and Len to drill through it in several places. One very puzzling thing is that the water half way to the bottom of the lake is not cold, as one would naturally expect, but has a temperature of about 1·1° C (35·4° F). Different experts have different explanations for these 'warm lakes' and Victoria University men believe that the heat comes from the sun and not, as some scientists think, from heat stored within the earth. There seems to be quite a 'war' on about this.

The time passed very quickly. The week after I arrived we were all transported by 'chopper' further north, to the Wright Valley, which I was naturally very keen to see. One interesting thing we saw there was a river which flows inland. At any rate, it was certainly flowing 'up' the valley from the 'sea' end towards the 'mountain' end for several miles. The river is called the Onyx and becomes so big at the height of the summer, which is of course the only time when it flows, that it is hard to cross. After running inland for several miles it empties into Lake Vanda, another of these 'warm' ice-covered lakes.

I was sorry when my 'tour of duty' with the VUWAE team came to an end. It was a great experience and I am very grateful to all who made it possible for me to spend those weeks, usefully I hope, in those extraordinary Dry Valleys.

These Scientists

You remember that when Jim told me what he and his friends were to do, he said that he would ask Bob and Terry to tell me about their work. Well, he did, and here is Bob talking about the scientific work done at Scott Base where he was working in the lab and also out in the field.

I was quite amazed when I first looked into the main Scott Base laboratory. I suppose I was expecting something like the chemistry lab at High School, just a convenient place in which to carry out interesting experiments. But this lab looked like the bridge of a big ship. There were instruments and machines of all sorts and sizes, dials and gauges and panels: I hadn't the faintest idea what they were all for. There was quite a sizeable library of scientific books too.

Then I discovered that this was only one of the scientific buildings at the base. There are several neat, well-designed buildings some distance away from the base 'block' where the main lab is. These are for seismology (two huts) and auroral physics, and house the magnetometers. The main lab itself is divided into sections for general science work, for biology and for photography. It keeps one man busy during the winter processing the films that record automatically many of the continuous observations that have to be made. All around the base there are such special constructions as the Ionosonde and other aerials and the 'met' screen. Then at Arrival Heights there is – but more about that later.

For the moment I'll just try to give you an idea of the main scientific subjects or 'disciplines' which are studied at the base, and then tell you something about the scientific work which is carried out by static field parties and by mobile field parties using dog-teams or motor toboggans maybe hundreds of miles away.

I suppose the first discipline you would expect to hear about would be meteorology, the study of the weather. Apart from the usual recordings of temperature and barometric pressure and wind speed and cloud cover and so on, very little meteorological work is done at Scott Base. That is because met work is thoroughly covered at McMurdo, only a couple of miles away. True, temperatures differ at the two bases: in fact, over the year, Scott Base is on the average 10°F colder than McMurdo. But otherwise weather conditions are much the same at the two bases, and meteorology hasn't got the same significance as it has at a base far removed from any other recording station.

You will remember that Scott Base was built primarily for the Trans-Antarctic Expedition and was used also as one of a series of stations erected for the IGY, the International Geophysical Year. So naturally the group of sciences which come under the heading of Geophysics, the earth sciences, had a flying start at all the Antarctic stations constructed round about 1956–58; and both Scott Base and McMurdo were built at that time. Geophysics comprises, among other disciplines, seismology, geomagnetism, ionospherics, and auroral physics.

First then, *seismology:* No definite recording has yet been made of an earthquake actually centred in the Antarctic. Sometimes disturbances caused by ice movements have been thought to be earthquakes: when you remember that 90 per cent of the earth's ice is in the Antarctic, that the Ross Ice Shelf, with part of its northern edge only a stone's throw from Scott Base, is on the average about a thousand feet thick, and that in parts of inland Antarctica the ice covering the low-lying land beneath is over 15,000 feet – nearly three miles – thick, you will not be surprised that quite a quake can be caused by a sudden movement of part of this great ice mass. But although there may be no Antarctic earthquakes, the shock waves from earthquakes centred thousands of miles away can be recorded in the Antarctic after they have passed through the interior of the earth. It is very important to notice and record the time and strength and direction of the tremors, since much can be learnt from these data about the nature of the earth's interior and the thickness of its crust. It may even be possible in time to foresee where and when earthquakes will occur.

Now for *geomagnetism:* that is earth-magnetism. Our earth is a magnet with its ends, the Magnetic Poles, in the Polar regions. These are not fixed points but move about some hundreds of miles from the Geographical Poles, the North and South Poles you hear so much about. This 'earth magnet' produces a magnetic field through and surrounding the earth. The study of the ever-changing strength and direction of this magnetic field is called geomagnetism. One important side of the scientific work at Scott Base is the recording of these changes or 'fluctuations' to try to find out more about their nature and causes. As they often make the compass needle behave erratically they can create serious navigational problems.

Geomagnetism is linked up with the study of the earth's upper atmosphere. I'll try to explain why. Electrically charged particles, 'dust' if you like, some called cosmic rays, are constantly streaming into the earth's atmosphere from the sun and from outer space. These have formed a kind of envelope in our atmosphere, from 50 to 200 miles above the earth's surface, called the *ionosphere*. This zone consists of several layers, principally the D, E, and F layers. The study of the lowest layer, the *D-region*, is another very important part of the work carried on at our base.

As more and more of the electrically charged particles I told you about enter the upper atmosphere, most of them become trapped in the earth's magnetic field and are drawn towards the Magnetic poles. That is why the Polar regions are particularly good areas for upper atmosphere studies. The Antarctic is even more important than the Arctic in this respect because in the Antarctic there is a big, stable land mass to form a platform for observations, and because there is very little background radio noise to interfere with the 'sound' observations.

Electrically charged particles, mostly originating from the sun during sun-spot activity and solar flares, enter the earth's atmosphere, where they 'ionise' (that is, excite and break up) the existing upper air gases. When these later on recombine, they produce light of various colours depending on the type of gas and known as an aurora. This is seen most clearly in the Arctic and Antarctic regions. At Scott Base these strange and beautiful displays are photographically recorded by 'all-sky' cameras and in other ways. About five miles away on Arrival Heights there is an automatic auroral radar station which adds further to our knowledge of the nature and timing of auroral displays. Nobody lives there, but two men travel out every few days in a sturdy little tracked vehicle, half an hour's journey if the weather is reasonably good.

Disturbances in the upper atmosphere give rise to all sorts of strange radio noises: swishes and bonks and dawn chorus and carriage wheels are the names given to some of them. Those called 'whistlers' are caused by lightning flashes in the ionosphere. A New Zealand scientist at Scott Base was the first man to notice these whistlers in the Antarctic.

What is the use of accumulating all this knowledge? It is impossible to say what use may ultimately come from any new-found knowledge. But the study of the upper atmosphere and the many effects which the sun has upon our earth, has already proved of great value, and as we learn more about these things still more 'practical' advantages are bound to follow. The more we know about the ionosphere, for example, the better our radio communications will be. Already it is possible to predict for years ahead what the best frequencies are likely to be. And the more we learn about outer space, the safer and more successful will be future manned space flights.

So in these and other ways our New Zealand men wintering at Scott Base help to make discoveries which may well, in time, have a considerable effect upon the kind of life which will be lived by future generations.

You know, of course, that each summer there are other New Zealand scientists in the Antarctic as well as those working at Scott Base itself. For some years now there have been one or two geological and topographical survey parties in the field. They are the men who are carried by American planes from McMurdo to some distant part of the Ross Dependency and left there with either dog teams or motor toboggans to explore new country, country which has so far only been seen from a distance or perhaps from the air. When we were there, George and his team, you may remember, were away down near the Nimrod Glacier, and we heard them talking on the field radio the day we arrived at Scott Base. They had been flown down there with two dog teams a fortnight before we arrived.

'*How many dogs are there in a team?' I interrupted.*

Nine in our teams. George wintered over at Scott Base last year. He was responsible for feeding and training the dogs, so they knew him pretty well. George is a *geologist*, you know, and so is Trev. The mountain range they were working in is very interesting to geologists (indeed it's called the Geologists' Range). It appears to be joined up with a range away to the south-east where an earlier expedition, Scott's in 1912, found some particularly interesting fossils; and George and Trev have found some of the same sort. I expect George will be writing reports about it later on and they will probably be published and read with interest all over the world.

Our geologists have now been in practically every corner of the Dependency where there is rock to examine. But that doesn't mean that there is no more geological work to do. From now on, though, they will be working for a longer time in a comparatively small area of special interest.

In the laboratory at Scott Base

I suppose you are wondering about Dave, the *surveyor*. What work is left for surveyors to do in our part of the Antarctic? Well, even when they have made what are called 'reconnaissance surveys' of the whole of the Dependency which is not covered by ice, they will still want to make more detailed surveys of every part – just as has already been done about Scott Base. If you look at the map, you will see that the 'land' part, and that's what we really mean when we talk about the Ross Dependency, is nearly all in the west and south of the sector; Victoria Land and the Polar Plateau south of the Ross Ice Shelf. We've trespassed a bit on Australian Antarctic Territory – across that 160°E line of longitude. It is easier for us to get at it than it is for the Australians.

'Who makes the maps?' I asked.

The surveyor himself, Dave, say, draws a rough map, but all his detailed survey notes, his 'angles' and so on, go in time to the Lands and Survey Department* in Wellington. The cartographers there, the map makers, will carefully examine Dave's map, compare it with any previous maps and with the airphotos the Americans have taken, and in time they will produce the best map possible with the limited data available. There will probably be some names on it. That naming is a tricky business. The cartographers have to fit in any place-names the earlier explorers or the United States airmen have given to prominent features like high peaks or big glaciers. They have to see that any suggested names (George and his team will probably make some suggestions) have not been used before. All the names must be approved by the New Zealand Geographic Board, and they don't give their final approval until they have consulted the Geographic Boards of other countries like the United States and perhaps Australia.

I think I remember Bob's telling you about the *glaciologists*, the 'ice-boys' out on the ice shelf. They dig down into the snow and weigh samples to see how much air is still trapped in the snow. When the air has all been squeezed out the snow has turned into ice. They make all sorts of measurements to find out all they can about the movement of the ice shelf. Its speed is different in different areas: it ranges from only a few feet to as much as nearly a mile a year. They are also interested in the 'breakout' of the sea ice. This past summer the ice did not go out anything like as far south as it did some years ago when the open sea came nearly up to Scott Base. This year it was never nearer than seven miles. They want to learn enough about the 'pattern' of the breakout to be able to predict what will happen in the coming season. You don't want to build an airstrip on ice which will probably disappear before the season is over.

And then of course there are the *biologists*. But you'd better talk to Terry. He's a biologist and he had a very interesting time observing the penguins at Cape Royds.

Adelie penguins at Cape Royds: parent and chicks

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*The maps in this bulletin were specially drawn for it by map makers in the Lands and Survey Department.

The Natives

Now here is Terry to speak about his experiences at Cape Royds, about seven miles further north from Scott Base than Cape Evans, where Scott had his base in 1910–12. It was at Cape Royds that Shackleton had his headquarters in 1907–8.

Jim tells me you want to hear about my trip to Royds. I could talk about that for hours, so look out!

Shackleton's hut at Cape Royds is much smaller than the big hut at Cape Evans which you went to. Shackleton had only 14 men wintering there with him, and they didn't have wooden bunks built up like those at Evans. They did knock up bunks for themselves, but they only had hangings to separate the pairs of men and there's not much left of the canvas after 50 years.

I'm very keen on biology so you can understand how I felt when Harry told me I was to have a fortnight with Pete Irwin and his University of Canterbury students at Cape Royds. I was to be working with Andrew, 'the Skua Man'. These students have been studying the habits of seals, penguins, and skuas for several summers now. The base boys all seemed to think it a great joke that I was to help in the skua project. I'd seen a few skuas about. They looked like big seagulls to me and harmless enough. I soon found out what the joke was.

I went up by 'chopper' as Jim did to the Dry Valleys. You can't beat the 'choppers' for seeing the country. You fly quite low and not too fast. It's like a magic carpet.

Up the coast of Ross Island for a quarter of an hour or so, and then we passed over the old hut at Cape Evans. It seemed no time after that before we crossed the Barne Glacier. (Coming back we were further out – to sea I mean – and it was great to see the huge ice cliff. It must be 100 feet high where the glacier meets the sea.)

Shackleton's 1907–9 hut at Cape Royds

'Is that the Barrier?' I asked.

Oh no! Something like it on a small scale though. The face of the Barrier, the Ross Ice shelf, stretches for 400 miles remember. The face of the Barne Glacier would be only two or three miles, but it is very impressive all the same.

Well, suddenly, there was Shackleton's hut. Somebody pointed out the penguin colony or 'rookery' as we circled to come down, and our pilot took care not to fly too near the penguins. You should have heard Pete's language if *anybody*, no matter how important he was, frightened his penguins. He's quite right too. When people first started coming to this McMurdo Sound area again after 40 or 50 years, everybody naturally wanted to see the

The stove in the Royds hut

penguins, and some pilots even used to circle over the rookery. As a result, the nesting birds were scared and ran for their lives. Of course the skuas hopped in and had a feast of eggs and young chicks. So many penguins were either killed in the scramble or were frightened away for good that the penguins' population went down with a rush. Now there are only about 1,000 nesting pairs; in the 1955–56 summer there were twice as many.

We didn't live in Shackleton's hut. It is a historic place, and if it was burnt down – and that could easily happen – it would be irreplaceable. They told us it didn't become iced up as Scott's hut did, so all that the New Zealand Huts Restoration chaps had to do in 1960–61 was to repair the roof, clean the hut up generally, tidy the area and arrange all the relics as they must have been in Shackleton's time. At any rate it looks very 'real' now. You'll be surprised at the extraordinary variety of food left from 1908, mostly tinned meats and vegetables. There was a ham hanging up and a side of bacon, as hard as iron but perfectly fresh looking. We were interested to see photos of King Edward VII and Queen Alexandra on the wall. And there were magazines lying about, mostly dated 1907 and 1908.

The students have a little biological lab not far from the hut and they made room for me and my kitbag in it. I was very keen to get out and see the penguins. The rookery is only a few hundred yards away; you could hear the penguins talking and squabbling. They must have thought I looked strange because before we had finished the meal that my 'hosts' were just sitting down to when I arrived, two little fellows came across to look me over. When Andrew and I went over to the rookery to look *them* over, there seemed to be thousands of birds on a big, fairly level area near the sea. There were nests everywhere. What are they made of? Just little heaps of stones. There's nothing else they could use. There are absolutely no leaves or twigs, there is no wool or grass or bits of cloth. There are not many pebbles either. So the late comers are really in trouble.

You'd laugh to see the fathers-to-be trying to gather enough stones to make a nest; if they can't get enough stones honestly they set about stealing some. You'll see a penguin strolling innocently about the rookery until he sees a nest with nobody at home. Then he slinks up, has a quiet look around, takes hold of a stone in his beak and runs for his life. Penguins can't fly. The birds in the other nests peck at the thief as he runs past. But he keeps going until he reaches the place where his wife is waiting hopefully, and then he puts the stone down at her feet and trots off to find another stone while she adds this one more bit to the future home.

The chicks are not really very nice looking. They are fat, and greyish, and sometimes not very clean. You see, the parents can go off fishing and have a swim, but the chick can't swim yet – or hasn't tried – and so he doesn't get a bath every now and then to make him spick and span like his parents. When he moults, he looks worse still, terribly untidy. But when his beautiful white shirt front is showing and he has taken to the water, he is as handsome as his father, and that's saying something.

The Americans have been making experiments to discover how the penguins 'navigate' so marvellously. One biologist had five banded penguins flown from Wilkes Station to McMurdo. When the next nesting season began, three of the five were back at their old nest sites. They must have walked or swum over 1,900 miles to do that. Another scientist ringed about twenty penguins which were then flown 200 miles into the heart of the Antarctic, and released. Some weeks later a number of them were back at their rookery. How do they do it? There are no landmarks.

Now you want to hear about the skuas. I like skuas, I admit. A lot of people don't. In fact, many fellows hate them. I think there are two reasons for that. One reason is that one way the skua gets his food is to steal penguin eggs and young chicks. The other reason I found out very quickly, as I was told I would. We had been strolling about the penguin rookery or near to it for a few minutes when Andrew called out, 'Look out! Mind your feet.' And then I saw that I had almost trodden on two beautiful little ashy-grey baby birds, baby skuas. They were in their nest. That means even less than the penguins' nest does. It's just a little hollow in the rocky ground. I stooped down to have a better look – and then I heard a terrific din. Two birds on a high rock a hundred yards away were protesting violently. Then one rose up into the sky and came rushing down towards me. He got nearer and nearer – and bigger and bigger. When was he going to veer off? I was getting really scared and put my hands up to

protect my head. And then he – or she – just skimmed over the top of my head and flew off back to the rock. I didn't wait for number two. I must admit I kept away from skua nests for quite a while. Some chaps carry a stick with them and hold it over their heads. They say the skua always goes for the top of the stick instead of the owner's head. I jumped to the conclusion that the skua will never really strike your head. In fact I have read that somewhere. But one day I discovered I was wrong. One came at me, as they usually do, from behind. I suddenly felt a blow on the back of my head. I was wearing a heavy balaclava of course, but the knock was hard enough to make me feel dizzy for quite a while. I guess it was a foot that got me: Andrew tells me they lower their feet to strike. It wasn't his beak, anyway, or I'd have been knocked out properly.

But I couldn't really feel angry with the skuas for that attack. It always seemed to me that they showed great devotion to their chicks, and real courage, to attack a creature like me, so very much bigger and uglier than themselves. But it isn't pleasant to be the target for a skua's attack. They are big birds. From wing tip to wing tip they measure about four and a half feet, and weigh about two and a half to three pounds. Most chaps try to get a photo of a skua dive-bombing the photographer, but not many are game enough to hold the camera steady till the big bird is just about to make his last-minute swerve up and over.

Well, yes, they are scavengers. They help to keep your camp site tidy!

My job with Andrew was to band skuas. The biologists are anxious to find out all they can about the behaviour of the skuas: how long they live, whether they come back to the same site, or even nest, year after year, whether they have the same mate year after year, what their feeding habits really are and things like that. So they catch a bird, put a little numbered or coloured metal band (like a football sock!) on its leg and let it go again. Records are carefully kept and whenever a banded bird is recovered, anywhere at all, the details of the band-marks are sent in and distributed to interested people in all parts of the world.

In this way it has been found, for one thing, that skuas are great travellers. Banded birds have been found as far as 2,400 miles from where they were banded. Just lately five nesting skuas were taken from Cape Crozier on Ross Island, flown to the South Pole and liberated. *Ten days later* one of them was back at the nest site after flying 800 miles over a vast white desert. It has been proved that skua pairs are very faithful to each other. They mate for life and they do keep coming back year after year to the same site. And where they go in winter I wouldn't like to guess: some have been found off the coast of Japan.

Seals? Well, I wish you could have a yarn with Malcolm about seals. They're his specialty. Weddell seals are the ones you commonly see in the McMurdo Sound region. They are big beasts. An adult seal is generally eight or nine feet long and weighs about 900 pounds. If you look at them lying asleep on the ice (they usually seem to be asleep) they look for all the world like great big garden slugs. You can go right up to them: they won't hurt you. They just open their eyes, look sleepily at you and go off to sleep again. But in the water they are swift and agile. They feed on fish so they have to be good swimmers. To breathe, they cut holes up through the ice with their teeth. The mother seals generally have only one pup at a time. These pups are delightful little creatures.

Jim told you about the seal 'mummies' in the Dry Valleys, didn't he? If some seals climb high to die, others dive deep to fish. I suppose really they all do that. Some of the American biologists at McMurdo have been measuring the depths to which seals can dive in order to catch big fish which the scientists themselves have never been able to catch. So they fix pressure tubes to the seals' backs and let them go. The depths recorded amazed everybody. One seal had dived down to 350 metres. That's 190 fathoms or 1,148 feet – a long way down.

Those are the only native inhabitants you are likely to see much of in the McMurdo Sound area. You may see a few Emperor penguins. I did. There are plenty of them at Cape Crozier and a few other places. Cape Crozier is 50 miles east of Scott Base at the eastern tip of Ross Island. The Emperors are really magnificent birds. The name suits them. They stand about three feet high and are as dignified as the Adélies are cheeky and inquisitive. The Emperors are so much Antarctic birds that they hatch their eggs in the middle of the Antarctic winter. They have no nests at all. The mother – or father – keeps the egg warm in its big webbed feet by holding it up against a bare spot on the under side of its body.

A Weddell seal

Away down still further south there is no wildlife, or life at all for that matter. True, a far-ranging skua has occasionally been seen and (you'll be surprised to hear this) some mites, tiny, spider-like insects, have been found, by a New Zealand entomologist too, only 309 miles from the South Pole. But most explorers in the far south have not seen any living creatures at all.

On the other hand, on the voyage between New Zealand and the Antarctic, you see any amount of bird life, from the magnificent albatrosses to the beautiful little pure-white snow petrels.

But Cape Royds was the highlight of my Antarctic journey, and the Adélie penguins and the skuas will always be drawing me down there again.

Last Days

I hope you have enjoyed listening to Bob and Terry describing their experiences. I hope, too, that you will remember that we scouts were summer-party members and that we did not take part in any major field journey.

About the end of February we, like other summer-party men and the few visitors, were to leave for New Zealand. But fourteen men remained at Scott Base, and they will be there all through the long winter night. The nights down there are getting longer already and from about the end of April the sun will not once rise above the horizon for four months. It will be night all the time, just as when we were there it was day all the time.

The men will be comfortable enough at Scott Base. They will all be busy. Most of them are specialists, each with his own full-time job. There are generally two who have been field assistants during the summer. These two also will be very busy getting everything ready for the next field season. There will be dog teams to train, sledges to be relashed, varnished and so on, equipment like polar tents, dog harness, and ice axes to be checked and repaired, kitchen boxes and ration boxes to be packed. These two experienced men, mountaineers very often, will be a tower of strength to the novice sledgers next summer. They will all be well fed, and there will be books and films and classes in all sorts of subjects for those who do not wish to waste their spare time. But life will be strange and difficult. It is not easy to live with the same few people day after day in a small base. There cannot be much variety and if you don't hit it off with another man you have to go on living beside him all the same. But when these men were selected, one quality that was regarded as essential was that they were good mixers.

Emperor penguins at Cape Crozier

Winter at Scott Base

They will not be in the warm base building all the time. There are jobs outside that must always be done: snow to collect for water, the dogs to feed, rubbish to be disposed of, snowdrifts to be cleared from round the base. And out there it will be very cold, perhaps as cold as −50°F; that's 82 degrees of frost.

On June 22nd they will celebrate Mid-Winter's Day; and then they will look forward very, very eagerly to the first sunrise. About August 20th, if the sky is clear, the sun will peep above the horizon for a few minutes and then set again. But everybody will be out to see it. And then they will all be looking forward to the arrival of the first American plane from Christchurch – about September. It will bring mail. And then everybody will be busy getting ready for the arrival of the new team, and getting ready to go home.

I must tell you about one expedition I had before I left the Antarctic. Bob told me one morning that there would be two planes going out to bring George's team in from the Nimrod Glacier. The Scott Base leader was going and there would be room for one of us three. We were to draw lots. I won.

We took off from the McMurdo airstrip in perfect weather and flew South almost over the route taken by Scott and Shackleton fifty years ago. We saw White Island, Minna Bluff (I remembered that it was somewhere down below us that our friend Sir Charles Wright found the little tent almost buried in snow and in it the bodies of Scott, Wilson, and Bowers), and away on the right the mountains of Victoria Land. The place names brought back memories of the great men who travelled this route the hardest way, sometimes even hauling their sledges themselves, sometimes more than half starved, if not sick with scurvy. That glacier coming down through the high mountains from the Polar Plateau away to the west is called the Byrd Glacier (New Zealanders gave it the name) after the great American explorer who pioneered the

LEFT: *A mild blizzard*

RIGHT: *U.S. aircraft picking up a New Zealand field party for return to base*

B

En route by air

air age in the Antarctic; and the inlet where the glacier merges into the Ross Ice Shelf is called Barne Inlet after Lieutenant Michael Barne, one of the young Navy officers on Scott's first expedition, away back in 1902–3. Down below us there wasn't much to see, just a vast white plain stretching to the south and to the east; to the west lay the mountains.

But after about an hour and a half, or 300 miles, of flying we began to come down, just as more mountains began to show up ahead of us. We now turned towards the coastline, the junction of Ice Shelf and land. Everybody now kept a sharp lookout for George's camp. He had radioed that they would be camped approximately 40 miles south-east of Cape Wilson, which forms the northern 'head' of Shackleton Inlet, where the Nimrod Glacier meets the Ice Shelf. It was our sharp-eyed American pilot who first saw the two little tents, and in no time he was circling the camp looking for a safe place to land. George had warned us by radio that there was a nest of crevasses north of the camp site and the experienced airmen said they could see the danger area quite clearly. There were also belts of sastruggi (ice 'waves' formed by the wind) easily visible to the south, and the area between the camp and the glacier was quite obviously a mass of tortured ice. But east of the camp the ice-shelf surface seemed reasonably smooth (it looked quite rough enough to me), and Lieutenant Smither soon made his careful run-in. Landing was a bit bumpy, but good as Antarctic landings go except on carefully prepared ice runways.

I was very keen to meet the four men who had been dog-sledging in the dangerous mountain country to the west of the Ice Shelf, often at high altitudes, for nearly four months. It was particularly exciting to meet George, because we had heard him speaking on the field radio the night we arrived at Scott Base. They all had long hair and big bushy beards, and what we could see of their faces looked reddened and blistered. This was due to frostbite. They laughed this off as 'superficial' but it spoke volumes about the harsh conditions they had been undergoing. They had had the roughest period of the whole journey shortly before they reached the camp site. At one stage they had run into some quite serious crevassing and Len had broken through a snow bridge hiding a crevasse – fortunately a narrow one. He had gone in up to his middle. He just managed to grab a runner of the sledge as he fell, and the others rushed in and pulled him out. He was rather badly bruised about the hips and he told us he hadn't liked the look of the deep hole down below him at all.

We all helped to get the gear aboard the aircraft: also, of course the 18 dogs and the sledges. There were several heavy boxes of geological specimens, including, George told me, several pieces of rock containing the exciting fossils he mentioned during the radio conversation we heard at Base. About half an hour after landing, we were ready to take off again. That wasn't easy and the pilot had to use six JATO (that means 'Jet Assisted Take Off') bottles to lift the plane from the ice. The propeller had been turning all the time we had been there.

It was quite exciting being in the plane as we arrived at McMurdo. Several of the New Zealanders as well as Americans, gathered at the runway to give the field party a warm welcome home.

When we reached Scott Base Bob and Terry told me I was just in time to meet a very interesting man who had had lunch that day at our Base. He was a Russian glaciologist, an 'exchange' scientist at McMurdo. We knew of course that men of different nations got on splendidly together in the Antarctic. We had been delighted at the very friendly relations which obviously existed between the New Zealanders at Scott Base and the men at the much bigger American base, McMurdo. We had learned too that it is the usual thing for one or two men of other 'Antarctic' nations to winter over at McMurdo, while a similar number of Americans wintered at, perhaps, a French or a South African or a Russian base. These exchange scientists are always made to feel completely at home at McMurdo, and the Americans always enjoy their stay at a foreign base. I met Ivan, and a very nice chap he was.

All this reminded me that perhaps the greatest result of the work of eleven nations in the Antarctic – Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, South Africa, the United Kingdom, the U.S.A., and the U.S.S.R. – could be, not the wealth of scientific information or the material benefits arising from exploration and research in Antarctica, but the example of how men of different nations, even men of two nations which elsewhere are jealous and suspicious and afraid of each other, can and do live together and work together perfectly happily for a common end, the welfare of mankind.

Field party men back in the comfort of Scott Base

Well, that brought us to our last few days in the Antarctic. We were to fly back to New Zealand and on February 25th we boarded a Hercules ski-equipped plane at the ice runway near McMurdo after saying goodbye, an especially warm one to the members of the team who were staying for the winter. We couldn't see much coming out as a heavy cloud bank covered the Victoria Land coast, but eight hours later, as we approached the New Zealand coast, we had a wonderful view of the green and lovely land.

We were delighted to be able to pick out the towns of Dunedin, Oamaru, Timaru, as we flew up the coast of the South Island. It was grand to see the trees and grass again and pleasant to feel the heat of the midsummer sun. But never in all my life will I forget the wonderful days we spent in the Great South Land in the company of a group of men of whom New Zealand should be very proud.

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On page 12 (left) is a painting by Howard Mallitte, Tourist and Publicity Department.

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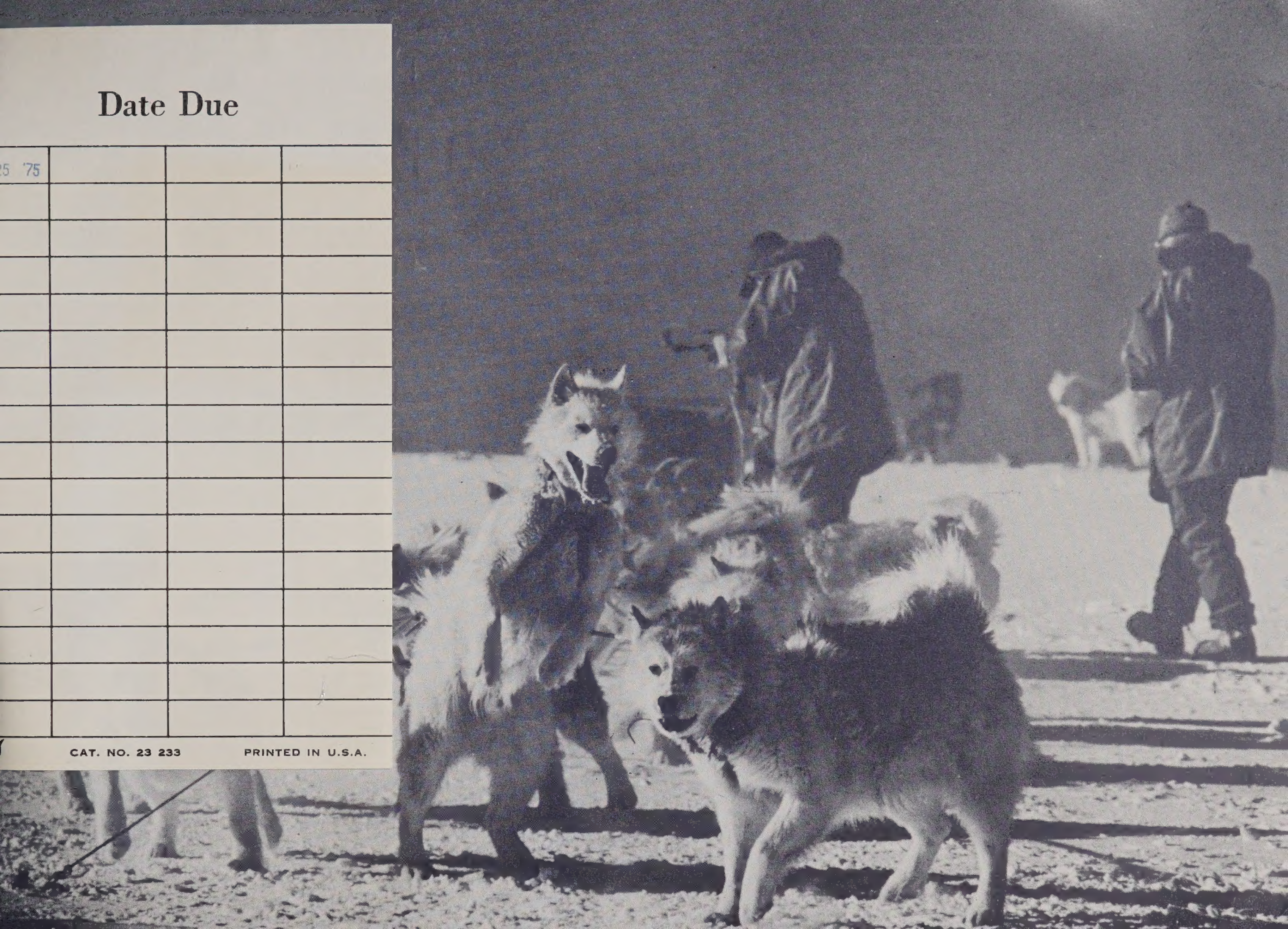

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